EFFECTIVENESS OF ROCKING CHAIR EXERCISE IN LEVEL OF BOWEL FUNCTION AMONG PATIENTS WHO UNDERWENT ABDOMINAL SURGERY

BY

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A DISSERTATION SUBMITTED TO THE TAMILNADU DR.M.G.R.MEDICAL UNIVERSITY, CHENNAI, IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN NURSING

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DECLARATION

I hereby declare that the present dissertation entitled **"Effectiveness of rocking chair exercise in level of bowel function among patients who underwent abdominal surgery"** is the outcome of the original research work undertaken and carried out by me under the guidance of **Dr. Latha Venkatesan,** M.Sc (N)., M.Phil (N)., Ph.D (N)., Principal, Apollo College of Nursing, **Mrs. Jaslina Gnanarani .J,** M.Sc (N)., Reader Medical Surgical Nursing Department, Apollo College of Nursing, Chennai. I also declare that the material of this has not found in any way, the basis for the award of any degree or diploma in this university or any other universities.

II Year M.Sc (N)

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SYNOPSIS

An Experimental Study to Assess the Effectiveness of Rocking Chair Exercise in Level of Bowel Function Among Patients Who Underwent Abdominal Surgery in Apollo Main Hospital, Chennai.

The Objectives of the Study were,

1. To assess the level of bowel function before and after rocking chair exercise in the control and experimental group of patients who underwent abdominal surgery.
2. To determine the effectiveness of rocking chair exercise by comparing the level of bowel function in the control and experimental group of patients who underwent abdominal surgery.
3. To determine the level of satisfaction on rocking chair exercise among experimental group of patients who underwent abdominal surgery.
4. To find out the association between the selected demographic variables and the level of bowel function before and after rocking chair exercise in control and experimental group of patients who underwent abdominal surgery.
5. To find out the association between the selected clinical variable and the level of bowel function before and after rocking chair exercise in control and experimental group of patients who underwent abdominal surgery.

The conceptual framework for the study was developed on the basis of Wiedenbach's Helping Art of Clinical Nursing Theory (1964), which was modified for the present study.

In this study post test research design was adopted for the experimental group. The present study was conducted at Apollo Main Hospital, Chennai among patient who underwent abdominal surgery with open or laparoscopic surgery. The study sample size for the present study was 60 patients who underwent abdominal surgery. Among the 60 patients, 30 patients were assigned to experimental group, 30 patients were assigned to control group who satisfied the inclusion criteria.

An extensive review of literature and guidance by experts laid to the foundation to the investigator for development of demographic variable proforma and clinical variable proforma for patients to obtain the baseline data. Gastro intestinal resumption indicator tool were used for assessing the bowel function and satisfaction checklist of patients on rocking chair exercise. The data collection tools were validated and reliability was established. After the pilot study, the data collection of the main study was conducted for a period of four weeks. The collected data was tabulated and analyzed by using appropriate descriptive and inferential statistics.

Major Findings of the Study were

- Significant number of patients who underwent abdominal surgery were at age of 20 to 40 years(33.33%, 16.66%), 41 to 49 years (30.00%, 33.33%), male and female were equal (50%, 50%), most of the patient educational status were higher education (66.66%, 53.33%) and income were > 30,000 Rs. (53.33%, 50.00%) and majority of the patient were married (93.33%, 96.66%) and Hindu's were (93.33%, 93.33%) in both control and experimental group respectively.

- Most of the patients who underwent abdominal surgery had the body mass index of < 25 (56.66%, 46.66%), no habit of drinking (56.66%, 66.66%) and not underwent abdominal surgery previously (70%, 50%) in control and experimental group respectively. Majority of them were non vegetarians (80%, 80%), had usual bowel pattern once in a day and not used any laxatives at home, pre operative bowel preparation of giving enema and keeping NBM were (100%, 100%), general anaesthesia were used (93% , 100%), NG tube present postoperatively for decompression (73.33%, 63.33%), received non opioid medication as an analgesic (80%, 70%), and underwent intestinal related surgery (13.33%. 20.00%), gastric related surgery (30%, 23.33%), liver and pancreas related (20%, 20%), reproductive related(36.66% , 36.66%) in control and experimental group.
- Most of the patients (60%) had resumed partial function of bowel between the (14 to 28hrs) postoperatively in the control group whereas in experimental group 70% of patients had resumed complete bowel function (<13hrs) postoperatively. Absence of bowel function (>29hrs) after surgery in some of the patients (13.33%, 6.66%) in both control and experimental group respectively..
- There was significant difference in the mean (47.86, 28.86), and standard deviation of the control and experimental group was (16.87, 15.40) respectively. The 't' value of 16.15 was highly significant at (P< 0.001). Hence the null hypothesis Ho_1 there will be no significant difference in level of bowel function before and after rocking chair exercise in the control and experimental group of patients who underwent abdominal surgery is rejected.

- All the patients in experimental group were highly satisfied (100%) with the rocking chair exercise.
- There was an association between gender of the patient (χ^2=9.37, df=1), ($p<0.01$) in control and (χ^2=9.6, df=1), ($p<0.01$) in experimental group of patients who had undergone abdominal surgery and level of bowel function. But other demographical variables did not show any significance association with bowel function in the control group and study group. Hence null hypothesis Ho_2 was partially rejected.
- There was a significant association between the diseases (χ^2=6.91, df=1), ($p<0.01$), the surgery that the patient underwent (χ^2=6.91, df=1), ($p<0.01$), presence of NG tube for decompression postoperatively(χ^2=5.10, df=1), ($p<0.05$) pain medication that was used(χ^2=5.86, df=1), ($p<0.05$) and the route of medication of analgesic(χ^2=7.95, df=1), ($p<0.01$) with the level of bowel function in control group.
- There was significant association between the disease (χ^2=8.68, df=1), ($p<0.01$), the surgery that the patient underwent(χ^2=8.68, df=1), ($p<0.01$), presence of NG tube for decompression (χ^2=12.12, df=1), ($p<0.001$), pain medication that was used (χ^2=11.42, df=1), ($p<0.001$) and the route of medication (χ^2=11.42, df=1), ($p<0.001$) with the level of bowel function in experimental group. Other clinical variables did not have the association with the level of bowel function. Hence null hypothesis Ho_3 was partially rejected.

Recommendations

The researcher recommends the following studies

- Rocking chair exercise must be mandatory to all postoperative patients after any type of surgery.
- Rocking chair must be kept in all postoperative wards.
- Awareness about the rocking must be initiated among health care professionals.
- Rocking chair exercise could be included in preoperative teaching programme.
- The same study could be conducted on larger samples for better generalization.
- The study could be done in patients undergoing other surgeries and for various disease conditions.
- A study could be conducted to assess the level of knowledge among nurses regarding the rocking chair exercise for the management of patients post abdominal surgery.

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CHAPTER I

INTRODUCTION

Background of the Study

"The belly rules the mind"

- Spanish proverb

Health maintenance is an important activity of any individual, families and community with the intention of improving or restoring health or to treat or prevent disease. Self care is a personal health maintenance which includes the decision to stay physically and mentally fit. The most important aspect of health maintenance is eating well, of a healthy diet. A healthy diet involves consuming appropriate amounts of all essential nutrients and an adequate amount of water.

There is a tendency for all to consider the heart and brain as vital organs in the body, completely overlooking the gastrointestinal tract (GI tract). Even though the GI tract is not the most attractive organ in the body, they are certainly among the most important organ like any other organ and plays an important role in maintaining health by performing various functions. The 30 plus foot long tube that starts from the mouth to the anus which is responsible for many body functions. The GI tract is imperative for our well being and our life- long health. If GI tract is not functioning that will leads to many acute or chronic illnesses that will affect the day to day function level and the quality of life.

The Gastrointestinal System is responsible for the breakdown of food contents, digestion, absorption and excretion of waste that is needed to maintain and sustain life. The gastrointestinal tract starts from the mouth, goes down through the

oesophagus, stomach, small intestine (duodenum, jejunum, ileum) and then into the large intestine or colon and extends to the rectum and anus.

The main causes for the extended length of hospitalization following abdominal surgery are postoperative ileus (POI), which is the temporary impairment of gastrointestinal motility characterized by abdominal distension, pain, delayed passage of the stool and gas, nausea, vomiting and decreased appetite. This postoperative ileus is a temporary condition in which part of the intestine becomes paralyzed and therefore does not function properly. This condition is most common after any type of abdominal surgery especially surgeries involving the movement of the intestines. This condition may delay patient ambulation, increasing the risk of pulmonary and thromboembolic complications, and it may delay enteral feedings or resumption of a solid diet, resulting in poor nutrition with delayed wound healing. The type of anaesthesia used during surgery as well as pain relief medications such as opioids often exacerbate POI.

A retrospective review of more than the 800,000 who underwent surgery in the United States in 2002 found a rate of postoperative ileus of 4.25% according to the International Classification of Diseases- Ninth Revision (ICD_9) codes.

Postoperative ileus is a predictable delay in gastrointestinal motility that occurs after the abdominal surgery. Probable mechanisms include disruption of the Sympathetic and Parasympathetic pathways to the GI tract, inflammatory changes mediated over multiple pathways, and the use of opioids for the management of postoperative pain. Current management strategies consist of careful selection of

anaesthetics and analgesics choices before, during, and after surgery, along with the avoidance of nasogastric tube feedings and the use of supportive therapies.

The symptoms of POI include nausea, vomiting, abdominal distension, abdominal tenderness, and delayed passage of flatus and stool. Prevention of POI will improve patient comfort, shorten the length of stay, limits the costs and also prevention of infection. The POI was first described by Cannon and Murphy in 1906, and is now commonly described as a transient postoperative period of gut motility dysfunction.

POI may be generally defined as a transient impairment in the gastrointestinal (GI) motility in the postoperative setting, however, no standard nomenclature or grading system exists. Postoperative hypo motility may affect all parts of GI tract but with differential recovery of normal function. Small intestine function generally normalizes first, often within several hours of surgery. Gastric motility usually returns to normal within 24 – 48 hours after surgery. The colon is usually the final portion of the GI tract to regain normal motility, which usually occurs within 48 – 72 hours after surgery. Motility normalizes in the proximal colon first and then progresses to the transverse and left colon (Massey et al. 2007).

Early ambulation or mobilization is a widely practiced and important component of postoperative care following open abdominal surgery not only abdominal surgery but also for any other surgery to prevent complication and reducing the length of hospital stay. Its benefits were first reported in the 1940s when

early mobilization was observed to hasten recovery and reduce the incidence of postoperative complications.

Miedema & Johnson (2003) contend that although POI has been recognized as a post-operative phenomenon since 1899, little progress has been made towards its prevention and treatment during a century in which other significant advancements in surgical techniques and postoperative care were made. To date, physicians and nurses have little to offer patients other than reassurance that the incapacitating symptoms will resolve in time and bowel function will return. According to A.J. Bauer (2004) article that POI is contributed by three mechanisms: namely neurogenic, inflammatory and pharmacological mechanisms. In the acute postoperative phase, mainly spinal and supraspinal adrenergic and non-adrenergic pathways are activated. Recent studies, however, show that the prolonged phase of postoperative ileus is caused by an enteric molecular inflammatory response and the subsequent recruitment of leukocytes into the muscularis of the intestinal segments manipulated during surgery. This inflammation impairs local neuromuscular function and activates neurogenic inhibitory pathways, inhibiting motility of the entire gastrointestinal tract. Finally, opioids administered for postoperative pain control also contribute to a large extent to the reduction in propulsive gastrointestinal motility observed after abdominal surgery.

Moore et al (1995) stated that the immobilizing effects of POI are associated with absent, abnormal, or disorganized motor function of the stomach, small bowel, and colon resulting in the accumulation of gas that cannot be dissipated, abdominal distension, nausea, vomiting, and are debilitating.

Rocking motion may be useful in resolving postoperative ileus in patients who have undergone abdominal surgery. Activities such as rocking are identified as stimuli that induce relaxation by moderating and mediating various stress response mechanisms and initiating what is described as the Relaxation Response (Benson, 1996). As previously discussed, rocking has been found by several researchers from 1993 to 2000 to offset the negative effects of stress, illness, and surgery and contribute to the resolution of POI. Previous studies of Thomas et al. (1990) used rocking in combination with medications as an intervention. This study evaluated the effects of rocking chair motion as the only intervention in order to reduce clouding of results due to co variation from other interventions.

Need for the Study

Postoperative ileus (POI) is a form of gastrointestinal dysfunction that commonly occurs in patients after abdominal surgery and results in absent or delayed gastrointestinal motility, food intolerance, gas retention, and pain. POI may last for four to five days and complicate the full and timely recovery of the patient. Literature suggests that the duration of POI is in part related to the degree of surgical trauma and is more severe following extensive surgeries of the colon.

When POI prolonged, however, POI can increase patient pain and discomfort, decrease his or her mobility, and thereby increase by his or her sense of dissatisfaction with the surgical outcome. Occurrence of POI delays initiation of oral feeding and that may compromise postoperative nutrition which can lead to greater postoperative catabolism, poorer wound healing and increased susceptibility to infection. These

problems contribute to prolonged hospitalization and significant burden on the health system.

According to Holte and Kehlet (2002) the factors that contribute to POI, its onset and persistence are due to the activation of the inhibitory reflexes, inflammatory mediators and various forms of anaesthesia used during surgery, and opioids given for pain control which extends the duration of ileus.

Luckey et al. (2003) studies suggest that there are multiple contributing causes of POI and to date no specific interventions have been discovered that prevent and successfully resolve POI. POI is a major health problem because it places post operative abdominal surgery patients at increased risk for development of circulatory and pulmonary complications associated with reduced physical activity due to pain and other immobilizing symptoms.

Research contributed by Barnes et al (1997), Clark (2002), provides overwhelming evidence that POI extends the affected patient's post-surgical recovery period of several days and significantly delaying the healing process and adds more than $1 billion annually to the costs of related health care to treat the problem.

Louvry et al. (2002), Luckey et al. (2003), hypothesized POI to be the body's sympathetic-induced response to over stimulation and stress imposed by large abdominal incisions and extensive manipulation and dissection of the bowel causes POI.

Currently, clinical standards for determining the prevention, treatment, and resolution of POI continue to be as confounding as the multiple combinations of contributing factors that cause it. In addition, the agreement among practitioners regarding the assessment and evaluation of signs and symptoms of POI has been difficult to establish until the last decade. Today's standard clinical practice protocols recommend that the assessment of postoperative patients for POI include the daily auscultation of the patient's abdomen for the return of bowel sounds, plus monitoring the patient for the passage of gas through the rectum; a phenomenon commonly called "surgeons' music" (Prasad & Matthews, 1999). Historically, hearing bowel sounds following surgery was thought to be proof that the POI was absent or resolved.

However, there remain inconsistencies in the research and clinical literature about whether or not the return of bowel sounds is indeed the most reliable indicator of complete and proper bowel function in postoperative abdominal surgery patients. Some researchers argue that the absence of abdominal distension and vomiting must also accompany the presence of bowel sounds and "surgeons music"

Rocking motion may be useful in resolving postoperative ileus in patients who have undergone abdominal surgery. Activities such as rocking are identified as stimuli that induce relaxation by moderating and mediating various stress response mechanisms and initiating what is described as the Relaxation Response (Benson, 1996). As previously discussed, rocking has been found by several researchers to offset the negative effects of stress, illness, and surgery and contribute to the resolution of POI, used rocking in combination with medications as an intervention.

This study evaluated the effects of rocking chair motion as the only intervention in order to reduce clouding of results due to co variation from other interventions.

Despite conflicting research findings over the past several decades, the clinical community does agree that the standard measure to evaluate the resolution of POI is the actual passage of flatus from the rectum. While this standard provides clinicians with tools to assess and evaluate POI, more studies are needed that employ low-risk.

Although many studies related to paralytic ileus have been done abroad, in India, till date no research has been done on postoperative paralytic ileus and the role of nurses in assessing the bowel function and exercises to reduce the paralytic ileus. There will be a greater impact on nursing care if evidence based care is applied. The study will provide guidance for the nurses in the surgical settings. Hence the investigator felt the need of the study.

Statement of the Problem

An Experimental Study to Assess the Effectiveness of Rocking Chair Exercise in Level of Bowel Function Among Patients Who Underwent Abdominal Surgery in Apollo Main Hospital, Chennai.

Objectives of the Study

1. To assess the level of bowel function before and after rocking chair exercise in the control and experimental group of patients who underwent abdominal surgery.

2. To determine the effectiveness of rocking chair exercise by comparing the level of bowel function in the control and experimental group of patients who underwent abdominal surgery.
3. To determine the level of satisfaction on rocking chair exercise among experimental group of patients who underwent abdominal surgery.
4. To find out the association between the selected demographic variables and the level of bowel function before and after rocking chair exercise in control and experimental group of patients who underwent abdominal surgery.
5. To find out the association between the selected clinical variable and the level of bowel function before and after rocking chair exercise in control and experimental group of patients who underwent abdominal surgery.

Operational Definitions

Effectiveness

In this study, effectiveness refers to the extent to which the rocking chair has improved the level of bowel function of patients who underwent abdominal surgery.

Rocking chair

The chair contact with the floor at only two points, giving the occupant the ability to rock back and forth by shifting his or her weight or pushing lightly with his or her feet. This exercise is given for 20 to 30 minutes two to three times in a day. The desirable outcome of rocking chair exercises on patients subjected to abdominal surgery in resumption of gastrointestinal function.

Bowel functions

Abdominal sounds (bowel sounds) are made by the movement of the intestines as they push food through and heard by using a stethoscope on the abdominal wall indicate that the gastrointestinal tract is working.

Abdominal surgery

The term abdominal surgery broadly covers surgical procedures that involve opening the abdomen which can be minor procedures like laparoscopic assisted surgery or major surgery were the abdomen will be opened such as exploratory laparotomy, cholecystectomy, LSCS, total abdominal hysterectomy.

Assumptions

- Patients undergoing abdominal surgery are at risk of developing paralytic ileus .
- Accumulation of gas in the bowel aggravates the intensity of pain.
- Postoperative ileus is a temporary impairment of gastrointestinal motility that commonly occurs after surgery.
- Rocking chair exercise facilitates the relaxation.
- Rocking chair enhances the bowel function

Null Hypothesis

H_{o1} There will be no significant difference in level of bowel function before and after rocking chair exercise in the control and experimental group of patients who underwent abdominal surgery.

H_{02} There will be no significant association between selected demographic variables and level of bowel function before and after rocking chair exercise in control and experimental group of patients who underwent abdominal surgery.

H_{03} There will not be any significant association between selected clinical variables and level of bowel function before and after rocking chair exercise in control and experimental group of patients who underwent abdominal surgery**.**

Delimitation

- The study is limited to patients who are admitted to Apollo Main Hospitals Chennai.
- The study is limited to patients who had undergone abdominal surgery at the time of data collection.
- The study period is limited to 4 weeks duration.
- The study is limited to patients who are hemodynamically stable.

Conceptual Framework for the Study

The conceptual framework deals with the interrelated concepts that are assessable together in some rational scheme by virtue of their relevance to a common theme (Polit and Beck, 2010).

This conceptual model shows the relationship among the different concept. The researcher has identified, "Modified Ernestine Wiedenbach's Helping Art of Clinical Nursing Theory" (1964) to be appropriate for the current study. This involves the nurse coordinating with the patient, wherein, a plan is formulated to meet the

patient's needs based on available resources and implementation. Finally the nurse reconstructs the experience to ascertain the met needs and there after taking further appropriate action.

Wiedenbach's views nursing as an art based and goal directed process. The nurse presents the plan to the patient and the patient responds to it. Widenbach's vision of nursing practice closely parallels the assessment, implementation, and evaluation steps of the nursing process Based on Wiedenbach, nursing practice consists of identifying a patient, need for help and validating that the need that was met according to this theory, factual and speculative knowledge, judgment and skills are necessary for effective nursing practice.

In Widenbachs theory, identification refers to determining a patient's need for help based on the existence of a need. Ministration refers to the provision of needed help. Validation refers to a collection of evidence that shows a patient's needs have been met and that his/her functional ability has restored as a direct result of nurses action.

The recipient is the individual who is able to determine the need for help. Nurses have to intervene when the patient has obstacles in relieving the pain and discomfort. Thereby promoting satisfactory coping for the individual. Here the recipients are the patients who are receiving **Rocking Chair Exercise** in the post surgical ward.

Identification

In the identification phase, the investigator identified the patient who underwent for abdominal surgery with paralytic ileus by assessing bowel sounds with the help of a stethoscope and asking the patient about the passing of flatus. Investigator selected both male and female patients in the age group of > 20 years. The study group patients were subjected to rocking chair exercise and the investigator identified the impact of rocking chair exercise on the resumption of gastrointestinal function.

Ministration

In the ministration phase, the patients in the study group received rocking chair exercise for 60 minutes in 30 minutes interval (30+30) two times a day. The control group received routine post-op care. Ministration is providing the needed help. In ministering the nurse performs the rocking chair exercise to the patient underwent abdominal surgery. It has the following two components:

- Prescription
- Realities

Prescription

Prescription refers to the plan of providing rocking chair exercise after assessing the bowel function. A prescription may indicate the broad general action appropriate to the implementation of the basic concept as well as suggest the kind of behavior needed to carry out these actions in accordance with the central purpose.

Prescription refers to the provision of rocking chair exercise in improving the bowel function. This includes assessing the bowel function of patient underwent abdominal surgery after rocking chair exercise till the patient gets discharged.

Realities

Realities are the situation that influences the fulfillment of central purpose. Wiedenbach defined five realities as:

- **Agent**

  The agent, the practicing nurse or delegate is characterized by the personal attributes, capacities and competencies in nursing. In this study, the investigator was the agent.

- **Recipient**

  The recipients, the patient are characterized by the personal attributes, problems and inability to cope with the concerns or problems being experienced. Patients who underwent abdominal surgery were the recipients in this study.

- **Goal**

  The goal is the desired outcome the expected wishes to achieve. The goal is the end result to be attained by the nursing action. The goal of this study is to improve the bowel function after the rocking chair exercise in terms of early return of bowel sounds, passing of flatus.

- **Means and activity**

  It is comprised of the activities and devices through which the practitioner is enabled to attain her goal. It includes the skills, techniques, procedures and devices that may be used to facilitate care.

In this study, means and activity refers to assessing the bowel function with the use of gastrointestinal resumption tool.

- **Framework**

  The framework consists of human, environmental, professional and organizational facilities that not only make up the context within which nursing is practiced but also constitute its currently existing limits. Framework of this study is Apollo Main hospital, Chennai.

Validation

The validation involves post tests. It refers to the collection of evidence that showed the effectiveness of Rocking chair exercise in view of bowel function. It includes gastrointestinal resumption indicator tools to assess the bowel function and satisfaction checklist to assess the satisfaction of patients. Validation was done by analyzing the attainment of central purpose.

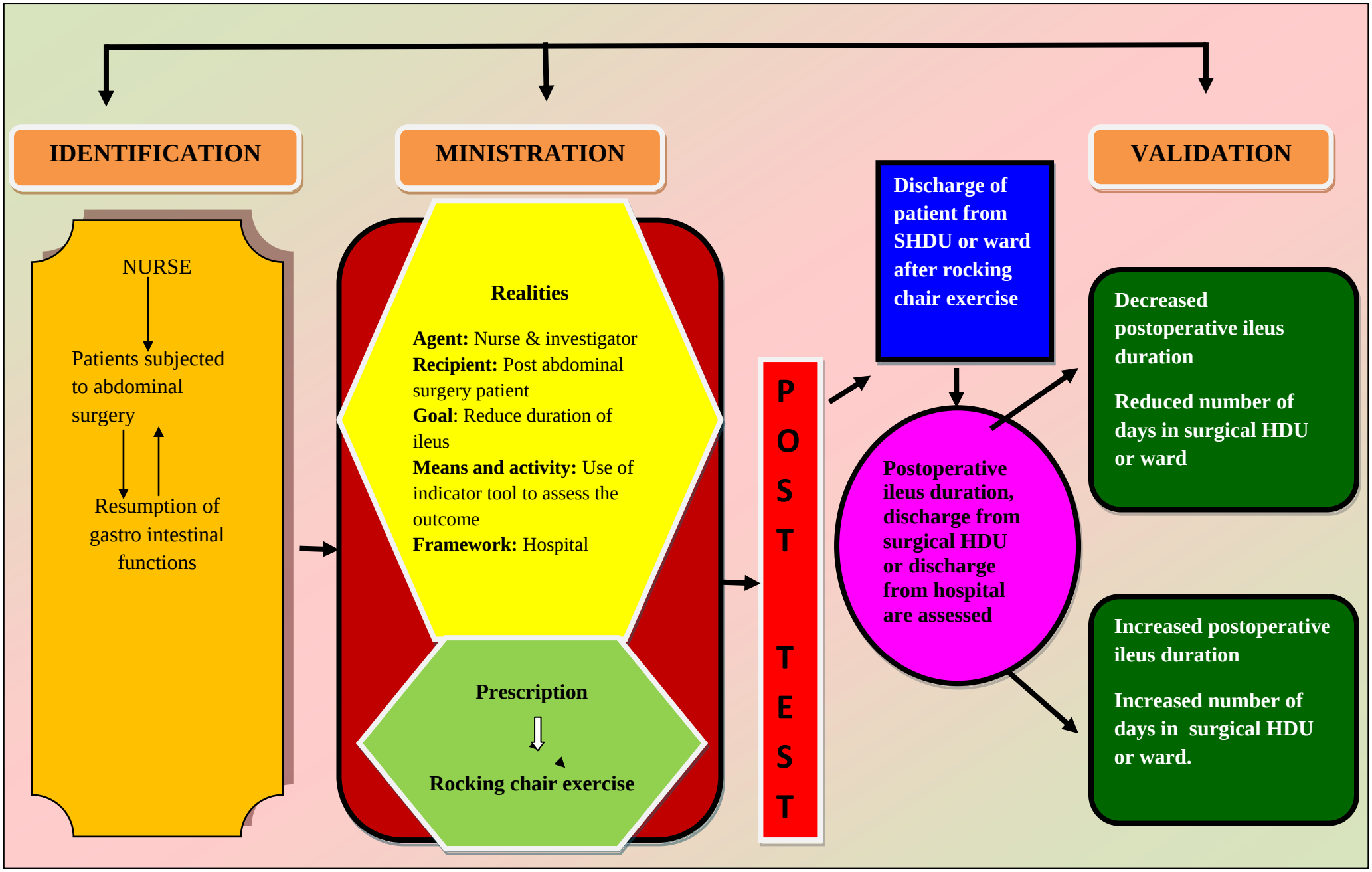

Fig1. Conceptual Framework Based on Modified Widenbach's Helping Art of Clinical Nursing Theoty (1964)

Projected Outcome

The study will help to provide evidence based guidelines for improving bowel function for the postoperative patient who has undergone abdominal related surgery and increases the knowledge and practice among nurses regarding earlier ambulation and exercises that helps and prevent complications. Performing rocking chair exercise increases the satisfaction of patients and reduces the length of stay in hospital.

Summary

This chapter has dealt with the background, need for the study, and a statement of the problem, objectives, operational definitions, assumptions, null hypotheses, delimitations and conceptual framework.

Organization of the Report

Further aspects of the study are presented in the following five chapters.

CHAPTER – II : Review of literature

CHAPTER – III : Research methodology includes research approach, research design, setting, population, sample and sampling techniques, tool description, content validity and reliability of tools, pilot study, data collection procedure and plan for data analysis.

CHAPTER – IV : Analysis and interpretation of data

CHAPTER – V : Discussion

CHAPTER – VI : Summary, conclusion, implications and recommendations.

CHAPTER -II

REVIEW OF LITERATURE

A literature review is an organized written presentation of what has been published on a topic by scholars (Burns & Groove, 2004). The task of reviewing literature involves the identification, selection, critical analysis and reporting of existing information on the topics of interest. A review acquaints the researcher with what has been done in the field and it minimizes the possibilities of unintentional duplications. It justifies the need for replication provides the basis of future investigations and help to relate the findings of one study to another.

This chapter deals with a review of published and unpublished research studies and from related material for the present study. The review helped the investigator to develop an insight into the problem area. This helped the investigator in building the foundations of the study.

The review of literature for this study is presented under the following headings.

1. **Literature Related to Abdominal Surgery**
2. **Literature Related to Interventions for Initiating Bowel Movement**
3. **Literature Related to use of Rocking Chair Exercise**

I. Review Related to Abdominal Surgery

Krapohl et al. (2011) conducted study on Bowel preparation for colectomy and risk of Clostridium difficile infection by American college of Surgeons- National Surgical quality improvement program team in 24 hospitals among 2263 patients

between August 2007 and June 2009 by using observational cohort study.. The proportion of patients in whom C difficile infection was diagnosed after the use of preoperative oral antibiotics was smaller than the proportion of patients with C difficile infection who did not receive oral antibiotics (1.6% vs 2.9%, P = .09). This multicenter study showed that the preoperative use of mechanical bowel preparation was not associated with increased risk of C difficile infection after colectomy.

An observational study by Forsgreng and Altman (2010) to describe present knowledge regarding the incidence, cause, and risk factors in patients undergoing hysterectomy. The reported incidence of pelvic organ fistula after hysterectomy ranges from 0.1 to 4% in different studies, and a higher incidence is generally reported after radical hysterectomy compared with hysterectomy on benign indications. Although rarely encountered in a general population, pelvic organ fistula disease may have a devastating effect on all aspects of quality of life.

Louvry et al. (2009) conducted a study to assess whether mechanical massage of the abdominal wall after colectomy reduce postoperative pain and shorten the duration of ileus among 25 patients. Massage sessions began the first day after colectomy and were performed daily until the seventh postoperative day. Using Visual Analogue Scale (VAS), pain scores, doses of analgesics, and delay between surgery and the time to the first passage of flatus were assessed. From the second and third postoperative days, respectively, VAS pain scores and doses of analgesics were significantly lower in patients receiving active massage compared to the placebo group. Time for the first passage of flatus was also significantly shorter in the active-massage

group. These results suggest that mechanical massage of the abdominal wall may decrease postoperative pain and ileus after colectomy.

A cohort study was done by Robert et al. (2005) from National Health Service Medical Record Linkage Database. Among 8849 women who underwent open gynaecological surgery in 1986 was followed for the impact of adhesions over ten years. Readmissions following open gynaecological surgery(4.5%) were directly related to adhesions. 34.5% of patients were readmitted, for a problem potentially related to adhesions or for further intra-abdominal surgery that could be complicated by adhesions.. Operations on the ovary had the highest rate directly related to adhesions.

Baig and Wexener (2004) reviewed the literature from Medline Database, to explain the pathophysiology of postoperative ileus is and the duration of ileus which is correlated with the degree of surgical trauma. Postoperative ileus can develop after all types of surgery. A variety of treatment options have been used to decrease the duration of postoperative ileus. Currently, the important factors that could affect the duration and recovery from postoperative ileus include limitation of narcotic use by substituting alternative medications such as nonsteroidal and thoracic epidural with local anaesthetic. The selective use of nasogastric decompression and correction of electrolyte imbalances also considered as an important factor.

A systematic review was done by Bruce et al. (2002) to review the definition and measurement of anastomotic leak after gastrointestinal surgery. Ninety-seven studies were reviewed and a total of 56 separate definitions of anastigmatic leak was

identified at three sites: upper gastrointestinal (13 definitions), hepatopancreaticobiliary (14) and lower gastrointestinal (29). The majority of studies used a combination of clinical features and radiological investigations to define and detect an anastomotic leak.

To assess the effect of epidural anaesthetics versus systemic opioids on postoperative ileus, Kehlet and Holte (2001) conducted randomized trials. Several treatment modalities have become accepted management options for Postoperative ileus (POI) those are nasogastric suction and prokinetic agents. However, data demonstrating that these agents reduce the duration of Post operative ileus are limited. Of current treatment modalities, use of epidural local anaesthetics appears to be the most effective means of reducing POI. Other potentially effective treatments include early enteral feeding and less invasive surgical procedures. Together, these techniques have reduced the length of stay after colonic surgery in 2 to 3 days. Future studies κ-opioid agonists and peripheral μ-opioid antagonists, into a multimodal regimen, may offer new treatment options for the further impact POI duration.

Systematic review and Meta analysis of randomized controlled trials was done on the Post operative starvation after gastrointestinal surgery by Stephen Lewis ang Matthias Egger (2001). The aim of the study is to determine whether a period of starvation after gastrointestinal surgery is beneficial in terms of specific outcomes. Eleven studies with 837 patients met the inclusion criteria. In six studies patients in the intervention group were fed directly into the small bowel and in five studies patients were fed orally. Early feeding reduced the risk of any type of infection

and the mean length of stay in hospital. Based on this review it seems to be no clear advantage to keeping patients nil by mouth after elective gastrointestinal resection. Early feeding may be of benefit.

Brooks-Brunn (1997) did a prospective model building study about Predictors of postoperative pulmonary complications following abdominal surgery among 400 patients at Indiana University School of Medicine, Indianapolis, USA. Multicriteria outcome for postoperative pulmonary complication used to collectively assess atelectasis and pneumonia. Twenty-three risk factors were assessed. These results provided a framework for identifying patients at risk of developing a PPC following abdominal surgery. A reliable and valid risk index could be used clinically to guide preoperative and postoperative pulmonary care and target limited resources for patients at risk.

II. Literature Related to Intervention for Initiating Bowel Movement

A prospective randomized trial, to identify duration of postoperative ileus following ileostomy closure to evaluate the effect of gum chewing on the duration of POI following small bowel by Sanjay Marwah (2011). Hundred patients undergoing elective small bowel anastomosis for the closure of stoma were randomly assigned to the study group (n=50) and the control group (n=50). The study group patients chewed gum thrice a day for 1 h each time starting 6 h after the surgery until the passage of first flatus. The control group patients had standard postoperative treatment. The feeling of hunger was earlier and the postoperative hospital stay was shorter in the study group. And concluded that the cases of relaparotomy requiring additional adhesiolysis

and small bowel anastomosis for stoma closure are benefited by postoperative gum chewing.

An evidenced base report on Chewing Gum use and Duration of Postoperative Ileus in Patients Undergoing Abdominal Surgery and Creation of a Stoma. in this the researcher evaluated (1) time to passage of flatus, (2) time to passage of stool, or (3) length of hospital stay. Chewing gum was consistently found to reduce time to passage of flatus and stool and also found chewing gum reduced hospital stay but two found no difference bu Barbara et al.(2010). Analysis of studies reveal mixed results when chewing gum was compared to standard postoperative care in patients undergoing surgical reconstruction including ostomy surgery or creation of an orthotopic neobladder.

A systematic randomized meta analysis was done by Fitzgerald and Ahmed (2009), to assess the first flatus and bowel motion, length of stay and complications by using Medicine, Embase Cochrane controlled trial registers and reference test. Seven studies with 272 patients were included. There were no significant differences in complication rates and concluded that chewing-gum therapy following open gastrointestinal surgery is beneficial in reducing the period of postoperative ileus, although without a significant reduction in length of hospital stay. These outcomes are not significant for laparoscopic gastrointestinal surgery.

Wenceslao Vásquez et al. (2009) comparing the effect of gum chewing and standard treatment vs. standard treatment on ileus after colorectal surgery to assess first

flatus, time to first passage of faeces, and length of hospital stay. Six trials including 244 patients were analyzed. Time to first flatus was significantly reduced with gum chewing and standard treatment compared to standard treatment alone Time to first passage of faeces was significantly reduced but the length of hospital stay was only marginally reduced with gum chewing and concluded in patients with ileus after colonic surgery, gum chewing in addition to standard treatment significantly reduces the time to first flatus and the time to first passage of faeces when compared to standard treatment alone.

Sara and Ronald (2009) conducted a comprehensive review of evidence-based strategies to prevent and treat postoperative ileus (POI). Preoperative strategies employed to prevent or limit the duration of POI include avoidance of preoperative fasting and mechanical bowel preparation, use of epidural-local anaesthetics, implementation of minimally-invasive surgical techniques, and modification of pain management strategies and concluded though many of these strategies have proven beneficial, no single approach has demonstrated the ability to prevent or treat POI. However, when these strategies are used in combination as part of a fast-track multimodal treatment plan, there is a significant decrease in time to return of normal bowel function and a shortened hospital stay.

A retrospective study of Annette Bisanz et al. (2008) on characterizing post operative ileus as evidence for future research and clinical practice to determine clinical factors associated with paralytic ileus. In medical record review of 101 patients who had abdominal surgery, 44 developed postoperative ileus and 57 did not. Data analysis found that three factors were statistically significant in reducing ileus: (1) early

postoperative introduction of fluids and food, (2) avoidance of positive fluid balance exceeding 1,000 ml, and (3) avoiding potassium elevations over a 3-day period. Clinical implications include the importance of encouraging early oral intake, monitoring fluid intake and output in postoperative patients, and identifying positive fluid balance early to prevent it from continuing.

Luckey et al. (2003) did a study on mechanisms and treatment of postoperative ileus in the University of California from a Medline database search. The factors include inhibitory effects of sympathetic input; release of hormones, neurotransmitters, and other mediators; an inflammatory reaction; and the effects of anaesthetics and analgesics. Numerous treatments have been used to alleviate postoperative ileus without much success the conclusion is the etiology of postoperative ileus can best be described as multifactorial. A multimodality treatment approach should include limiting the administration of agents known to contribute to postoperative ileus (narcotics), using thoracic epidurals with local anesthetics when possible, and selectively applying nasogastric decompression.

In University of Missouri Hospital five patients were selected to assess the small bowel motility after aortic surgery by Miedema et al. (2000), Three-hour manometric studies were done after surgery and for 3 postoperative days. All patients had ileus development with return of bowel sounds at two to seven days (median, six days) and flatus at three to nine days (median, seven days) after surgery. Jejunal motor activity was present within six hours of surgery, but the motility index was less in study group then in the control group. They concluded that motor activity was present in the jejunum

shortly after aortic surgery. However, the activity decreased in intensity and the fasting cycle differs from control subjects. The data predicted a high rate of enteral feeding intolerance early after surgery.

Separate meta-analyses were conducted by Barnes et al. (1997) for any homeopathic treatment versus placebo. This study includes homeopathic remedies of < 12C potency and> or = 12C potency versus placebo. Meta-analyses indicated a statistically significant ($p < 0.05$) weighted mean difference (WMD) in favour of homeopathy (compared with placebo) on the time to first flatus. No significant difference that compared with homeopathic remedies > or = 12C versus placebo. There is evidence that homeopathic treatment can reduce the duration of ileus after abdominal or gynaecologic surgery.

According to Livingston and Passaro (1990) study on postoperative ileus in the Surgical Service, West Los Angeles Veterans Administration Medical Center. Inhibitory alpha 2-adrenergic reflexes with peptidergic afferents contribute to postoperative ileus. Clinically, treatment of ileus centers around symptomatic relief with nasogastric suction. Prokinetic drugs have not proven effective in the treatment of this disorder. Two types of ileus exist: postoperative and paralytic. Postoperative ileus resolves spontaneously after two to three days, and probably reflects inhibition of colonic motility. Paralytic ileus is more severe, last more than three days, and seems to represent inhibition of small bowel activity.

A study by Yukioka et al. (1987) on recovery of bowel motility after surgery. The time to first flatus (TFF) was noted in 20 patients aged 60 yr or older and measured simultaneously using carbon dioxide analyzers. After cystoscopy under general anaesthesia, 10 patients received nalbuphine 20 mg i.v., and 10 patients had placebo (normal saline). In 16 patients (80%) the two observed times coincided and there were no false reports. Two patients were asleep, and did not report TFF. In two others the sampling tube became obstructed. Therefore, both methods are of value; the carbon dioxide analyser, however, is a sensitive and accurate monitor of the initial passage of flatus which does not require patient co-operation. In the i.v. Nalbuphine group, the median TFF was more than three times as long (212 min) as that in the placebo group (64 min) (P less than 0.01).

III. Literature Related to use of Rocking Chair

Massey RL (2012), conducted a randomized study to assess the postoperative ileus (POI) after abdominal surgery among 66 patients. Time (days) of return of bowel sounds after abdominal surgery was compared to the time (days) of first postoperative flatus were compared to those who received standard care and standard care plus a rocking chair intervention. Pearson's correlation between time to first flatus and return of bowel sounds for combined groups was not significant indicating that time to return of bowel sounds and time to first flatus were not associated. The results of this study provide support for evidence-based inquiry that questions the relevance of traditional nursing practice activities such as listening to bowel sounds as an indicator of the end of POI.

Massey (2010), conducted as a randomized trial of rocking-chair motion on the effect of postoperative ileus duration in patients with cancer recovering from abdominal. Rocking-chair motion has shown promise in reducing postoperative ileus duration. Sixty-six participants were randomized into 2 groups. The experimental group received standard care plus the rocking-chair intervention; the control group received standard care. Participants in the experimental group had shorter duration of POI, no effect on medication use, and time to discharge.

A randomized controlled trial was done to assess the benefits of home-based rocking chair exercise for physical performance among community-dwelling elderly women by Niemela et al.(2010) at Kauniala Hospital and Rehabilitation Center .51 womens were randomly assigned to the Rocking Chair Group (RCG) and control group by drawing lots. The RCG carried out a six-week rocking chair training program at home including ten sessions per week, twice a day for 15 minutes per session, and ten different movements. The data showed significant interactions of group, maximal knee extension strength, and in maximal walking speed, which indicates that the change between groups during the follow-up period was significant.

Pierce et al. (2009) conducted a study on the influence of seated rocking on blood pressure in the elderly patient with alziemers disease. Rocking of chair for one-two hr per day was done. Accordingly, they tested the efficacy of rocking activity for increasing BP in healthy, older persons. In this setting, they observed an average increase in SBP of 27 mmHg and in DBP of 2.5 mmHg after 30 min of rocking. In a subgroup (n = 8) of hypotensive individuals (SBP < 110 mmHg after sitting quietly for

30 min) extracted from both settings, rocking raised the average SBP from <100 mmHg to approximately 120 mmHg. These results are consistent with the hypothesis that rocking can increase BP and therefore, may enhance cerebral perfusion.

A quasi experimental study was conducted on 50 patients by Synder et al. (2009) to measures the effects of a glider swing on emotions, relaxation, and aggressive behaviors in a group of nursing home residents with dementia. Data were obtained during a 5-day baseline phase, a ten-day intervention phase, and a 5-day post treatment phase. Subjects were placed on the glider for 20 minutes each day during the intervention phase. The results of the study indicate that the glider intervention significantly improved emotions and relaxation. The most noted changes were found after 10 minutes of swinging. However, no differences were found in aggressive behaviors.

A study on balance training and exercise in geriatric patients in Germany by Runge et al. (2000). Among 212 participants without apparent locomotor deficits the test battery comprised the 'chair rising test' for measuring lower extremity neuromuscular function.. The subject stands with bended knees and hips on a rocking platform with a sagittal axle, which thrusts alternatively the right and left leg 7-14 mm upwards with a frequency of 27 Hz, thereby lengthening the extensor muscles of the lower extremities. They conducted a randomized controlled trial, cross-over design, intervention group two months training program three times a week . Performance tests of all participants every two weeks for 34 patients. The first 19 subjects finished the intervention period. With 18% mean performance gains in chair rising, strikingly

different to the constant values of the controls. They interpret the findings as improvements in muscle power by the oscillative muscle stimulation.

A sample of 34 patients was being studied, and data were being collected during a preadmission process and five postoperative days on investigating of rocking as a postoperative intervention to promote gastrointestinal motility by Moore et al. (1995). Using rocking as a moderator of the surgical stress response, the study hypothesizes a more rapid resumption of GI motility with decreased gaseous distention and associated pain, and less emotional distress for patients who follow a regimen of rocking in addition to ambulation

Waldhausen and Schirmer (1990) conducted a study on the effect of ambulation on recovery from postoperative ileus. Among 34 patients, ten of whom followed an ambulatory regimen beginning on postoperative day one. The other 24 patients (did not become ambulatory until postoperative day four. Group A was recorded before and after ambulation so comparisons could be made to determine if ambulation had an acute effect on myoelectric activity. Both the group recordings recordings were compared to judge whether there was an over-all effect of ambulation on myoelectric recovery. The data suggest that ambulation as a means to help resolve postoperative ileus and its accompanying cramps and bloating may be more perceived than real.

Based on Malcuit et al. (1988), study in cardiac and behavioural responses to rocking stimulations in one and three month-old infants in the Department of Psychology, Canada. Stimulations were given when infants were in an alert state. Rapid

and slow rocking induced similar cardiac responses in younger infants; Cardiac acceleration was shown with motor activation and cardiac deceleration with motor quieting. In three month olds, cardiac deceleration appeared with both types of motor reaction. In older infants, cardiac deceleration to rocking stimulation appeared even when it produced concomitant behavioural arousal. Vestibulo kinesthetic stimulation is interpreted as having an important homeostatic effect on the young organism.

Nancy M. Watson School of Nursing, University of Rochester, New York conducted cross over design on the Rocking chair therapy for 25 dementia patients: Its effect on psychosocial well-being and balance. Despite significant cognitive impairment, most medically stable unrestrained residents accepted the chairs and learned to actively rock. During the six week program, residents were able to rock an average of 101 minutes per day. There were improvements in depression/anxiety and reductions in PRN pain medication significantly related to amount of rocking.

Summary

This chapter has dealt with the review of literature related to the problem stated. It has also enabled the researcher to design the study, develop the tool and plan the data collection procedure to analyze the data. Thirty studies were reviewed, out of which 3 were retrieved from primary sources and twenty seven were retrieved from secondary sources.

CHAPTER III

RESEARCH METHODOLOGY

The methodology of the research study is defined as the way the data is gathered in order to answer the questions to analyze the research problem. It enables the researcher to project a blue print for the research undertaken. The research methodology involves a systematic procedure by which the researcher had a start from the initial identification of the problem to its final conclusion.

This chapter deals with a brief description of the different steps undertaken by the researcher for the study. It involves research approach, research design, setting, population, sample and sampling technique, sampling criteria, selection and development of the instruments, validity and reliability of the instruments, pilot study, data collection procedure and plan for data analysis. The present study is conducted to assess the effectiveness of rocking chair exercise in level of bowel function among patients who underwent abdominal surgery.

Research Approach

Research approach is the most significant part of any research. The appropriate choice of the research approach depends on the purpose of the research study which is undertaken. According to Polit and Beck, (2008) an evaluation research is most often used when researchers are trying to determine the effectiveness rather complex program. In this study investigator chosen to assess the effectiveness of rocking chair exercise to patients who underwent abdominal surgery.Two settings were chosen for the

study. These settings were randomly assigned to the control and experimental group. In this study, the investigator manipulated the independent variable i.e. Rocking chair exercise was given to the experimental group. The level of bowel function was assessed for both the control and the experimental group before and after the intervention. Then the level of satisfaction was assessed using a rating scale.

Research Design

According to Polit and Beck (2008), a research design is the overall plan for addressing a research question, including specifications for enhancing the study's integrity. A posttest design was adopted for conducting this study.

R - O1

R X O1

R - Randomization

O1 - Post test in control and experimental group

X - Rocking chair exercise

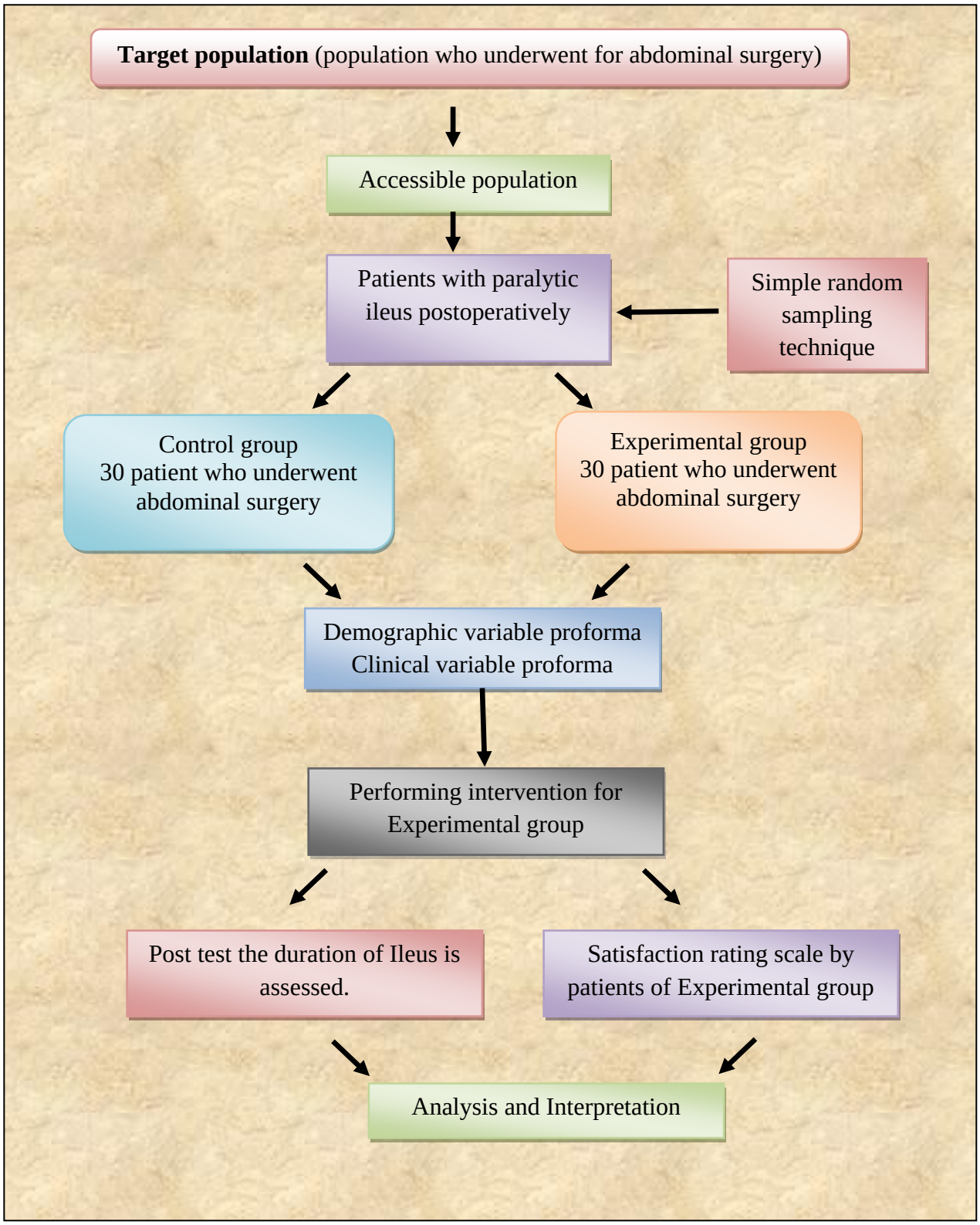

Fig.2 Schematic Representation of the Research Design.

Variables

Independent variable

The variable that is believed to cause or influence the dependent variable is the independent variable (Polit and Beck, 2008).

In this study the Rocking chair exercise was considered as independent variables.

Dependent variable

The variable hypothesized to depend on or be caused by another variable is the dependent variable (Polit and Beck, 2008).

In this study level of bowel function was considered as the dependent variable.

Attribute variable

Variables that describe the study sample characteristics are termed as attribute variables (Polit and Beck, 2008).

In this study the attribute variables were demographic variable proforma and clinical variable proforma of patients who underwent abdominal surgery.

Research Setting

The physical location and condition in which a data collection takes place in a study. (Polit and Beck, 2008). The present study was conducted at Apollo Main Hospital, Chennai.

Population

Target population is the group of population that the researcher aims to study and to whom the study finding will be generalized. In this study target population were patients who underwent abdominal surgery.

Accessible population is the list of population that the researcher finds in the study area. The accessible population in this study were patients who underwent abdominal surgery at Apollo Main Hospital, Chennai.

Sample

The sample is the subset of population, selected to participate in a study. (Polit and Beck, 2008). A sample consists of patient who underwent abdominal surgery at Apollo Main Hospital, Chennai who satisfied the inclusion criteria.

Sample size

Sample of this study were 60 patients who underwent abdominal surgery and satisfied the inclusion criteria. Among them 30 were taken for the control group and 30 were taken for study group.

Sampling Technique

Sampling is the process of selecting a portion of the population to represent the entire population (Polit and Beck, 2008). Simple random sampling technique was used in this study.

Sampling Criteria

Inclusion criteria

- Patients who are willing to participate in the study.
- Patients who underwent for abdominal surgery at Apollo Main Hospital, Chennai
- Patients both male and female above the age of 20.
- Patients who are able to follow the instruction.

Exclusion criteria

The study excludes

- Patients who are not available at the time of data collection
- Patients who are on mechanical ventilation
- Patients who are not willing to participate in the study.

Selection and Development of the Study Instruments

The data collection instruments were developed through an extensive review of literature in consultation with the opinion of experts and with the opinion of faculty members. The instruments used in this study are demographic variable proforma, clinical variable proforma, gastrointestinal resumption indicator and level of satisfaction of patient.

Demographic variable proforma of patients who underwent abdominal surgery

This proforma is used to measure the demographic variables of patients such as sample no, age, sex, educational status, marital status, religion and monthly income.

Clinical variable proforma of patients who underwent abdominal surgery

This proforma is used to measure the clinical variable of patients such as body mass index, habit of drinking, type of diet, previous history of abdominal surgery, disease of patient, surgery underwent, type of anaesthesia used, usual bowel pattern, use of laxatives at home, presence of NG tube, pain medication and type of surgery the patient underwent.

Gastrointestinal resumption indicator.

The investigator selects the tool to measure the level of bowel function by assessing the bowel sounds with stethoscope, and enquiring the patient about the time of flatus passed. The score from 8 hrs of postoperative was given as the score 1and every subsequent 2 hrs was given scores of 2,3,4…….. The score is given according to which hour patient passed flatus or bowel sounds heard. With that patient from study group was compared with the control group.

Score interpretation

Score <13 – complete bowel function

Score 14 – 28 – partial function of bowel

Score > 29 – absence of bowel function

Rating scale on level of satisfaction

The rating scale consists of 3 responses for rocking chair exercise, patient selects based on their level of satisfaction.

Score Interpretation

<30%	-	Dissatisfied
31-65%	-	Satisfied
>66%	-	Highly satisfied

Psychometric Properties of the Instruments

Validity

Content validity refers to the adequacy of the sampling of the domain being studied. The content validity of the tool was obtained by getting opinion from five experts in the field of medical surgical nursing as well as from medical guide. The validation has suggested some specific modifications in the objectives and rating scale. The modifications and suggestions of experts were incorporated in the final preparation of the tool.

Reliability

The reliability of the tool was elicited by using split half method. The 'r' was found to be 0.93 by using Karl pearson which shows highly positive correlation, indicates that the tool was highly reliable.

Pilot Study

According to Polit and Beck. (2009), a pilot study is a miniature or some part of the actual study, in which the instruments are administered to the subjects drawn from the population. It is a small scale version or trial run, done in preparation for the major study. The purpose is to find out the feasibility and practicability of the study design.

The pilot study was conducted in Apollo Main Hospital at Chennai from 11.06.12 to 23.06.12. Six patient as control group and six patients as study participants were selected. The patients who underwent abdominal surgery were selected by simple random technique and rocking chair exercise was given for study group based on the type of surgery they underwent. Laparoscopic surgery patients were given rocking chair exercise after 6 hrs of shifting from recovery room, and open surgery patients were given rocking chair exercise 12 hrs after shifting from recovery room. Rocking chair exercise was given for 60 minutes per day until they are discharged from the ward or transferred out of high dependency unit. The control and study group was assessed for bowel function and was monitored and analysis was done and identified that rocking chair exercise study is feasible and brings better postoperative outcomes or reduces duration of POI.

Protection of Human Rights

- The study was conducted after obtaining clearance from Ethical committee, Apollo Hospitals, Chennai and permission from the Research and Medical guide.
- Consent was obtained from all the participants/bystander before the data collection.
- Confidentiality was maintained throughout the study

Data Collection Procedure

Data collection is the precise, systematic gathering of information relevant to the research purpose. The researcher presented the proposal to the Ethical committee of

Apollo Hospitals and got ethical clearance to precede the study. The investigator collected the data from Apollo Main Hospital after obtaining proper administrative permission from concerned authorities. The observation and intervention time schedule was from 7a.m-12 noon and 12.30 p.m-5.30 p.m and the data collection period was from June 18th to July 23rdth 2011.

A group of 60 patients who underwent for abdominal surgery were selected by simple random sampling method and consent was obtained from the patient. Among the 60 patients, 30 patients were belonging to control group and 30 patients were belonging to experimental group. The baseline data were collected through the demographic variable and clinical variable proforma.

Rocking chair exercise was given to the study group based on the nature of surgery they underwent such as laparoscopic surgery, patients were given after 6 hrs of transferred from recovery and open abdominal surgical patients were given 12 hrs after transferred from recovery. The exercise was given for 60 minutes per day and continued until the patients got discharged from the general ward or transferred out of high dependency unit. Along with rocking chair exercise they were also given standard care such as ambulation and range of motion exercise. Control group was given only standard care. Bowel sounds, passing of flatus, initiation of oral fluids were assessed in hours and compared with control group who received routine care. Analysis was done and identified that rocking chair exercise reduced duration of ileus in experimental group than control group. Also assessed the level of satisfaction of experimental group on rocking chair exercise.

Problems Faced during Data Collection

The problems faced during the data collection were,

- Difficult to get permission from each consultant.
- Some consultant hesitated to perform the exercise for their patient.
- Few patients were scarred to perform the exercise.

Plan for Data Analysis

Data analysis is the systematic organization and synthesis of research data and testing of null hypotheses by using the obtained data (Polit & Beck, 2004). Data analysis and interpretation was carried out using descriptive and inferential statistics like mean, standard deviation,'t' Test and chi square.

CHAPTER – VI

ANALYSIS AND INTERPRETATION

This chapter deals with analysis and interpretation of data collected on number of issues from various sources. Statistics is a field of study concerned with techniques or methods of data collection, classification, summarising, interpretation, drawing inferences, testing of hypothesis, making recommendations etc. (Mahajan 2004).

Data was collected from 60 patients who underwent abdominal surgery at Apollo hospital, Chennai, among them 30 in control group and 30 in experimental group to determine the effectiveness of rocking chair exercise on level of bowel function. The data were analysed according to the objectives and hypothesis of the study.

The data was analysed, tabulated and interpreted using descriptive and inferential statistics.

Organisation of the findings

The findings of the study were organized and presented under the following heading:

- Frequency and percentage distribution of demographic variable of patients who underwent abdominal surgery in the control and experimental group.
- Frequency and percentage distribution of clinical variable of patients who underwent abdominal surgery in the control and experimental group.

- Frequency and percentage on level of bowel function after rocking chair exercise of patients who underwent abdominal surgery.
- Comparing of mean and standard deviation on level of bowel function in control and experimental group of patients who underwent abdominal surgery.
- Frequency and percentage distribution on level of satisfaction of patients who underwent abdominal surgery on rocking chair exercise.
- Association between the selected demographic variable and level of bowel function in control and experimental group using gastro resumption indicator.
- Association between the clinical variables and level of bowel function in control group and experimental group using gastro resumption indicator.

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Table.1

Frequency and Percentage Distribution of Demographic Variables in the Control and Experimental Group of Patients Who Underwent Abdominal Surgery.

Demographic variables	Control group (n=30)		Experimental group (n=30)	
	n	p	n	p
1.Age in years				
20 – 40	10	33.33	05	16.66
41 – 49	09	30.00	10	33.33
50 – 59	08	26.66	06	20.00
>60	03	10.00	09	30.00
2. Educational Status				
Illiterate	-	-	-	-
primary education	02	06.66	4	13.33
Higher education	20	66.66	16	53.33
Degree and above	08	26.66	10	33.33
3. Marital status				
Unmarried	02	06.66	01	03.33
Married	28	93.33	29	96.66
Widowed	-	-	-	-
Divorced	-	-	-	-

4. Religion				
Hindu	28	93.33	28	93.33
Muslim	02	06.66	02	06.66
Christian	-	-	-	-
Others	-	-	-	-
5. Income				
<30,000	16	53.33	15	50.00
30001 – 60000	13	43.33	10	33.33
>60000	01	03.33	05	16.33

` The data from table 1 represents that significant number of patients who underwent abdominal surgery were at age of 20 to 40 years(33.33%, 16.66%), 41 to 49 years (30.00%, 33.33%), male and female were equal (50%, 50%), most of the patient educational status were higher education (66.66%, 53.33%) and income were > 30,000 Rs. (53.33%, 50.00%) and majority of the patient were married (93.33%, 96.66%) and Hindu's were (93.33%, 93.33%) in both control and experimental group respectively.

Fig.3 shows percentage distribution of gender in control and experimental group of patient who underwent abdominal surgery which shows male and female were equal.

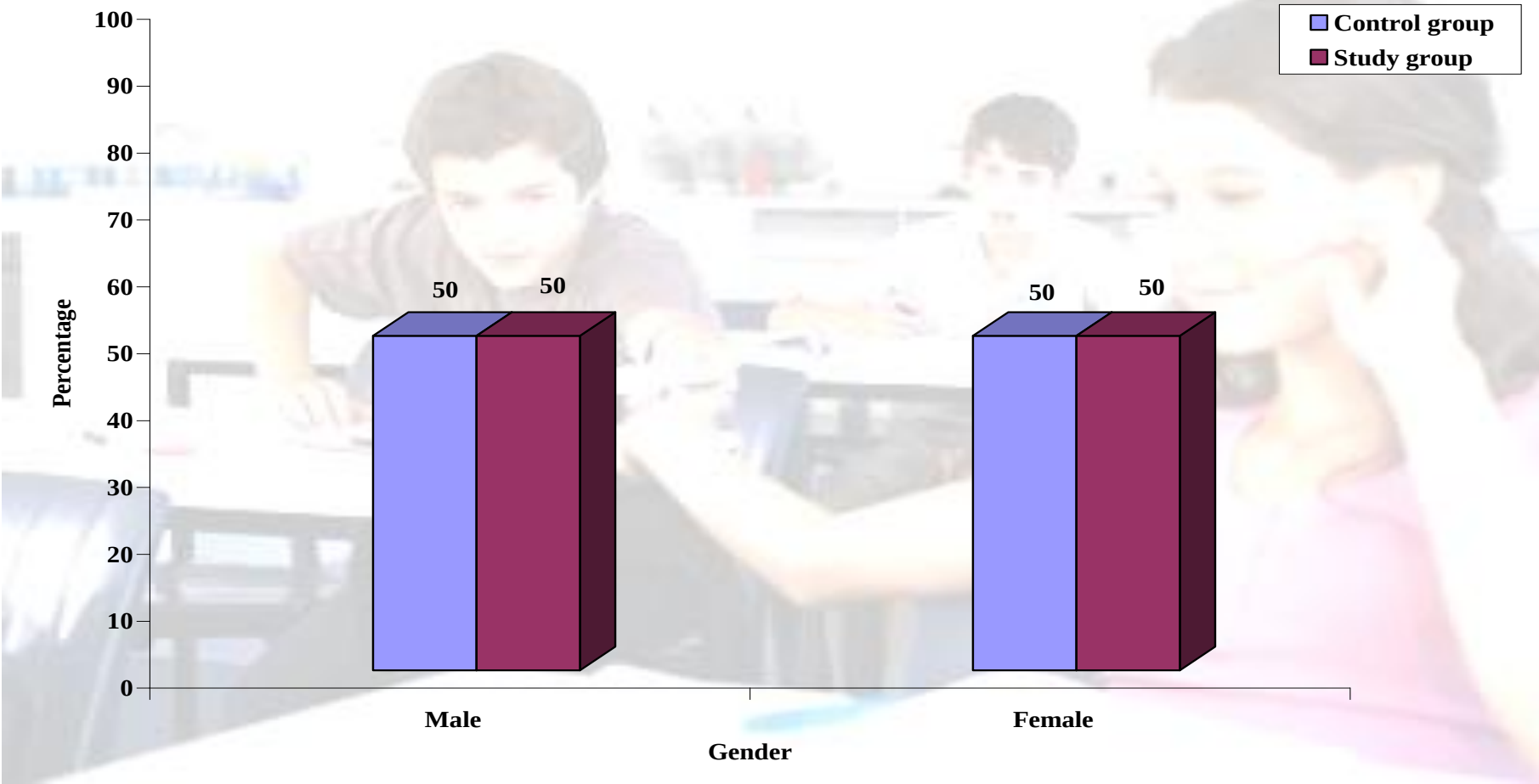

Fig. 3 Percentage Distribution of Gender

Table. 2

Frequency and percentage Distribution of Clinical Variables in the Control and Experimental Group of Patients Who Underwent Abdominal Surgery

Clinical variables	Control group (n=30)		Experiment group (n=30)	
	n	p	n	p
1.Body mass index				
<25	17	56.66	14	46.66
25-29	11	36.66	13	43.33
Above 30	02	06.66	03	10.00
2. Habit of drinking				
No	17	56.66	20	66.66
Daily	-	-	-	-
Occasional	13	43.33	10	33.33
3. Type of diet				
Vegetarian	6	20.00	6	20.00
Non vegetarian	24	80.00	24	80.00

4.Previous H/O abdominal surgery				
Yes	09	30.00	15	50.00
No	21	70.00	15	50.00
5. Types of Surgery				
Gastric related	07	23.33	09	30.00
Intestinal related	06	20.00	04	13.33
Liver & pancreas related	06	20.00	06	20.00
Reproductive related	11	36.66	11	36.66
6. Types of anaesthesia				
General anaesthesia	28	93.33	30	100.00
Spinal surgery	02	06.66	-	-
7. Co morbid illness				
Diabetes	08	26.66	8	26.66
Hypertension	02	06.66	10	33.33
Heart disease	03	10.00	04	13.33
Nil	18	60.00	17	56.66
8. Usual bowel pattern				
Once in a day	30	100.00	30	100.00
Once in 2 days	-	-	-	-

9. Use of laxatives at home				
Yes	-	-	-	-
No	30	100.00	30	100.00
10. Pre op preparation				
Only NBM	-	-	-	-
NBM & enema	30	100.00	30	100.00
NBM & Bowel wash Score	-	-	-	-
11. Presence of NG tube				
Yes	08	26.66	11	36.66
No	22	73.33	19	63.33
12. Pain medication				
Opioid	06	20.00	09	30.00
Non opioid	24	80.00	21	70.00
13. Pain medication route				
Intravenous	23	76.66	21	70.00
Intramuscular	-	-	-	-
Epidural	07	23.33	09	30.00
Oral	-	-	-	-

Table 2 represents that most of the patients who underwent abdominal surgery had body mass index <25 (56.66%, 46.66%), no habit of drinking (56.66%, 66.66%) had no co morbid illness (60.00%, 56.66%) and significant number of patient underwent reproductive related surgery (36.66%,36.66%) in control and experimental group

respectively. majority of the patients were non vegetarian (80%, 80%) and underwent for abdominal surgery previously (70%, 50%), had general anaesthesia (93.33%, 100%) and were receiving pain medication of non opioid (80%, 70%) and also had the NG tube (73.33%, 63.33%), (100%, 100%) of patient had usual bowel pattern, with no use of laxatives and preoperative preparation of enema and kept NBM in both control and experimental group respectively.

Fig.4 shows significant number of patient were having reproductive disease(36.66%, 36.66%), gastric (23.33% 30%), intestinal (20%,13.33) liver and pancreas (20%, 20%) diseases in both control and experimental group.

Fig.5 depicts significant number of patients underwent total abdominal hysterectomy (36.66%,36.66%)

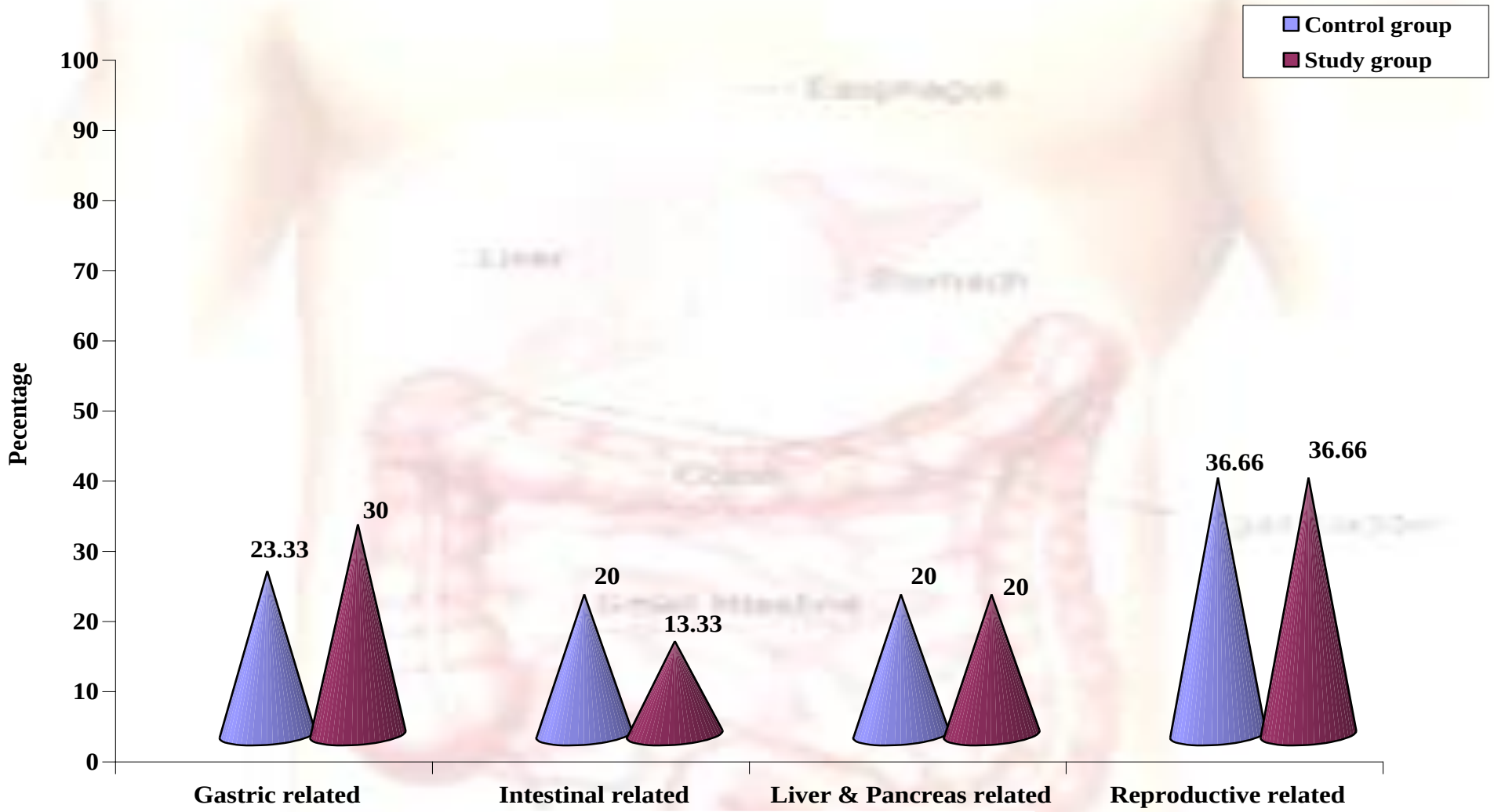

Fig. 4 Percentage Distribution of Disease of the patient in Control and Experimental Group

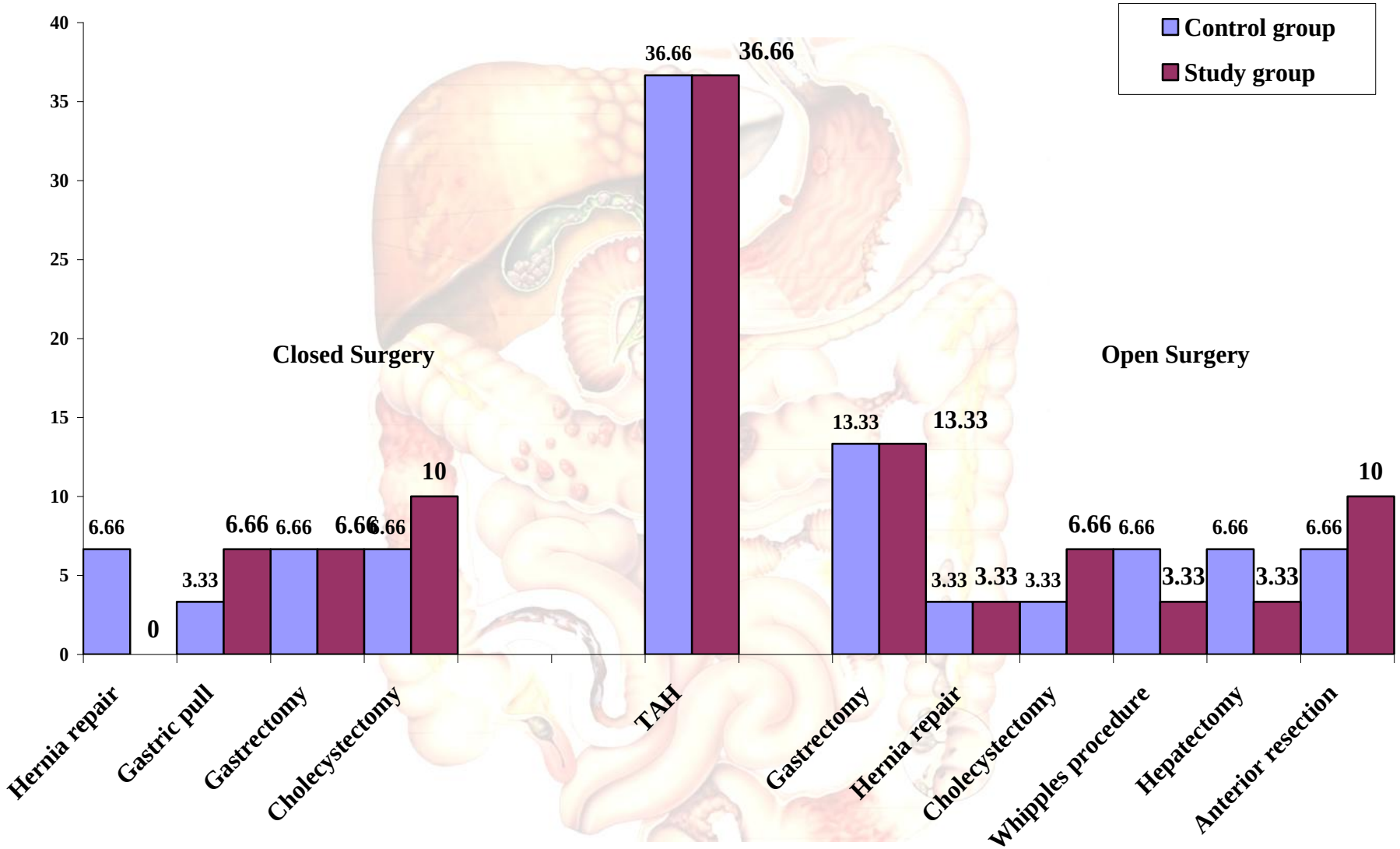

Fig.5 Percentage Distribution of Nature of Surgery

Frequency and Percentage Distribution on Level of Bowel Function after Rocking Chair Exercise

Fig.6 depicts that 60% of patient had resumed partial function of bowel i.e between 14hrs to 28hrs after surgery in the control group whereas in experimental group 70% of patients had resumed complete bowel function i.e within 13 hrs after surgery. Absence of bowel function (>29hrs) after surgery in some of the patients (13.33%, 6.66%) in both control and experimental group respectively..

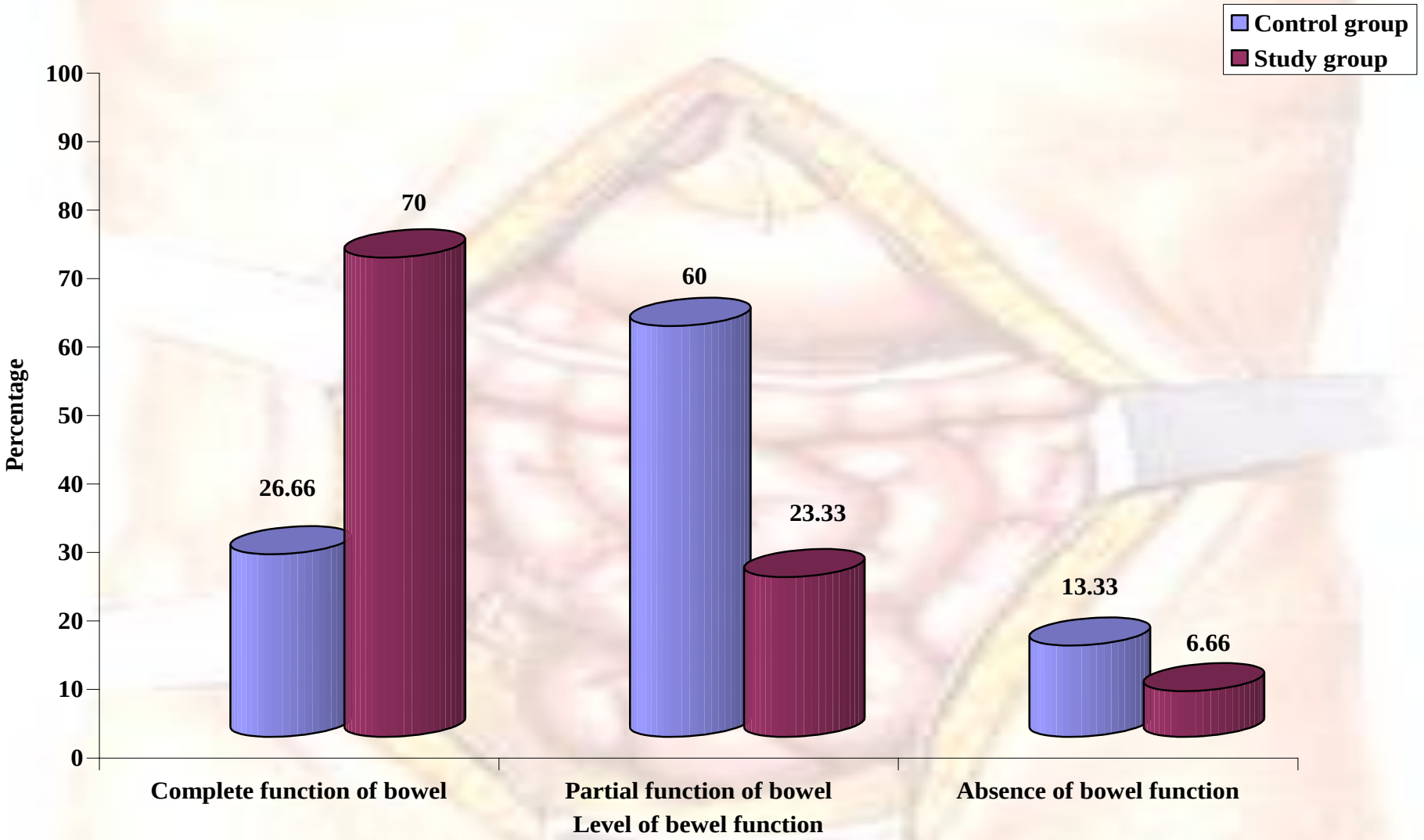

Fig. 6 Percentage Distribution on Level of Bowel Function in Control and Experimental group

Table. 3

Comparison of Mean and Standard Deviation on the Level of Bowel function in Control and Experimental Group on Rocking Chair Exercise of Patients Who Underwent Abdominal Surgery.

Group	N	Mean	Standard deviation	't' value
Control	30	47.86	15.50	16.15***
Experimental	30	28.86	13.88	

*** P < 0.001

The data in the table 3 depicts that the mean and the standard deviation of level of bowel function is good in experimental group (28.86%, 13.88%) than in control group (47.86%, 15.50%). There was a significant difference in the level of bowel function't' value of 16.15 at P< 0.001.

Frequency and Percentage Distribution on Level of Satisfaction of Patients Who Underwent Abdominal Surgery on Rocking Chair Exercise

Fig.7 reveals that all the patients in experimental group were highly satisfied (100%) with the rocking chair exercise.

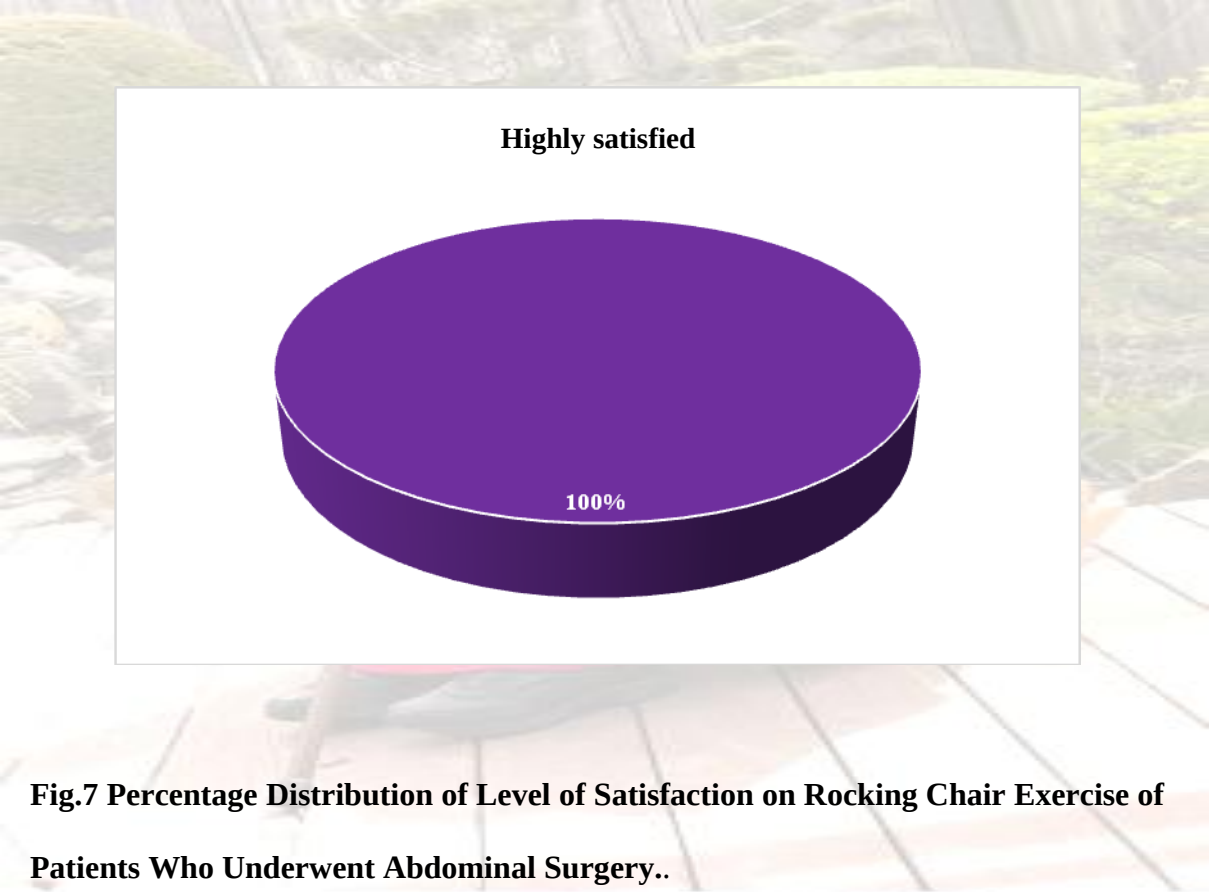

Fig.7 Percentage Distribution of Level of Satisfaction on Rocking Chair Exercise of Patients Who Underwent Abdominal Surgery..

Table .4

Association Between the Selected Demographic Variable and Level of Bowel Function in Control and Experimental Group Using Gastrointestinal Resumption Indicator.

Demographic variables	Gastrointestinal resumption indicator									
	Control Group (n=30)					Experiment Group (n=30)				
	Below mean		Above mean		χ^2	Below mean		Above mean		χ^2
	n	p	n	p		n	p	n	p	
1.Age in years										
Up to 40 years	7	23.33	3	10.00	0.2	3	3.33	2	6.66	0.1
Above 40 years	12	40.00	8	26.66	(df=1)	17	56.66	8	26.66	(df=1)
2. Gender										
Male	7	23.33	8	26.66	9.87**	6	20.00	9	26.66	9.6**
Female	11	36.66	4	13.33	(df=1)	14	46.66	1	6.66	(df=1)
3. Educational Status										
Up to primary	0	0	2	6.66	3.21	3	10.00	1	3.33	0.14
Above primary	18	60	10	33.33	(df=1)	17	56.66	9	30.00	(df=1)
4. Marital status	1	3.33	1	3.33	0.08	1	3.33	0	00.00	0.51
Unmarried	18	60.00	11	36.66	(df=1)	19	63.33	10	33.33	(df=1)
Married										
5. Religion										
Hindu	17	56.66	11	36.66	0.08	18	60.00	10	33.33	1.07
Muslim	1	3.33	1	3.33	(df=1)	2	6.66	0	00.00	(df=1)
6. Income										
Upto 30000	9	30.00	7	23.33	0.2	9	30.00	6	20.0	0.6
Above 30000	9	30.00	8	16.66	(df=1)	11	36.66	4	13.3	(df=1)

**p<0.01

Table 4 represents that there was an association between gender with level of bowel function in control and experimental group of patients who had undergone abdominal surgery. But other demographical variables did not show any significance association with bowel function in the control group and study group. Hence null hypothesis Ho_2 "There will be no significant association between selected demographical variables and level of bowel function before and after rocking chair exercise in control and experimental group of patients who underwent surgery" was partially rejected.

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Table.5

Association Between the Clinical Variables and Level of Bowel Function in Control and Experimental Group Using Gastrointestinal Resumption Indicator.

Demographic variables	Level of bowel function									
	Control Group (n=30)					Experiment Group (n=30)				
	Below mean		Above mean		χ^2	Below mean		Above mean		χ^2
	n	p	n	p		n	p	n	p	
Body mass index										
<25	6	20	11	36.66	0.33	9	30.00	5	16.66	0.06
>25	12	40	1	3.33	(df=1)	11	36.66	5	16.66	(df=1)
Habit of drinking										
No	5	16.66	8	26.66	0.14	2	16.66	8	26.66	0.14
Yes	13	43.33	4	13.33	(df=1)	18	43.33	2	13.33	(df=1)
Type of diet										
Vegetarian	3	10.00	3	10.00	0.32	5	16.6	1	3.33	0.93
Non vegetarian	15	50.00	9	30.00	(df=1)	15	50.00	9	30.00	(df=1)

Previous H/O abdominal surgery										
Yes	7	23.33	3	10.00	0.62	12	40.00	3	10.00	2.4
No	11	36.66	9	30.00	(df=1)	8	26.66	7	23.33	(df=1)
Disease										
Intestinal related	8	26.66	11	36.66	6.91**	9	30.00	10	33.33	8.68**
Non intestinal related	10	33.33	1	3.33	(df=1)	11	36.66	1	3.33	(df=1)
Surgery underwent										
Intestinal surgery	8	26.66	11	36.66	6.91**	9	30.00	10	33.33	8.68**
Non intestinal surgery	10	33.33	1	3.33	(df=1)	11	36.66	0	0	(df=1)
Types of anaesthesia										
General anaesthesia	17	56.66	11	36.66	0.08	20	66.66	10	33.33	0.00
Spinal surgery	1	3.33	1	3.33	(df=1)	0	0.00	0	0.00	(df=1)
Co morbid illness										
Present	7	23.33	5	16.66	0.02	7	23.33	6	20.00	1.69
Absent	11	36.66	7	23.33	(df=1)	13	43.33	4	13.33	(df=1)
Usual bowel pattern										
Once in a day	18	60.00	12	40.00	0.00	20	66.66	10	23.33	0.00
Once in 2 days	0	00.00	0	00.00	(df=1)	0	00.00	0	00.00	(df=1)

Use of laxatives at home										
Yes	0	00.00	0	00.00	0.00	0	00.00	0	00.00	0.00
No	18	60.00	12	40.00	(df=1)	20	66.66	10	33.33	(df=1)
Pre op preparation										
Yes	18	60.00	12	40.00	0.00	20	66.66	10	33.33	0.00
No	0	00.00	0	00.00	(df=1)	0	00.00	0	00.00	(df=1)
Presence of NG tube										
Yes	2	6.66	6	20.00	5.10*	3	10.00	8	26.66	12.12***
No	16	53.33	6	20.00	(df=1)	17	56.66	2	6.66	(df=1)
Pain medication										
Opioid	1	3.33	5	16.66	5.86*	2	6.66	7	23.33	11.42***
Non opioid	17	56.66	7	23.33	(df=1)	18	60.00	3	10.00	(df=1)
Pain medication route										
Intravenous	17	56.66	6	20.00	7.95**	18	60.00	3	10.00	11.42***
episural	1	3.33	6	20.00	(df=1)	2	6.66	7	23.33	(df=1)
Nature of surgery										
Laparoscopic	6	20.00	1	3.33		7	23.33	0	0.00	
surgery					2.51					0.065
Open surgery	12	40.00	11	36.66	(df=1)	13	43.33	10	33.33	(df=1)

***P<0.05, **p<0.01, ***p<0.001**

It could be inferred from table 5 that there was a significant association between the diseases, the surgery that the patient underwent, presence of NG tube for decompression postoperatively and the pain medication that was used both in control

and experimental group with the level of bowel function. Other clinical variables did not have the association with the level of bowel function. Hence null hypothesis Ho_3 "That there will not be any significant association between selected clinical variables and level of bowel function before and after rocking chair exercise in control and experimental group" was partially rejected.

Summary

This chapter dealt with analysis and interpretation of the data obtained by researcher. The analysis showed that rocking chair exercise for postoperative patient who underwent abdominal surgery had earlier resumption of bowel function compared to control group. The patients were highly satisfied with rocking chair exercise.

CHAPTER V

DISCUSSION

An Experimental Study To Assess The Effectiveness of Rocking Chair Exercise in Level of Bowel Function Among Patients Who Underwent Abdominal Surgery at Apollo Main Hospital, Chennai.

Objectives of the Study

1. To assess the level of bowel function before and after rocking chair exercise in the control and experimental group of patients who underwent abdominal surgery.
2. To determine the effectiveness of rocking chair exercise by comparing the level of bowel function in the control and experimental group of patients who underwent abdominal surgery.
3. To determine the level of satisfaction on rocking chair exercise among experimental group of patients who underwent abdominal surgery.
4. To find out the association between the selected demographic variables and the level of bowel function before and after rocking chair exercise in control and experimental of patients who underwent abdominal surgery.
5. To find out the association between the selected clinical variable and the level of bowel function before and after rocking chair exercise in control and experimental group of patients who underwent abdominal surgery.

The study was conducted among 60 patients between 20– 70 years of age who underwent abdominal surgery at Apollo Main hospital, Chennai. The effectiveness of rocking chair was assessed on level of bowel function of patients who underwent abdominal surgery.

The discussion is presented as follows

- Demographic variables of patients who underwent abdominal surgery.
- Clinical variables of patients who underwent abdominal surgery.
- Frequency and percentage on level of bowel function after rocking chair exercise of patients who underwent abdominal surgery.
- Comparing of mean and standard deviation on level of bowel function in control and experimental group of patients who underwent abdominal surgery..
- Frequency and percentage distribution on level of satisfaction of patients who underwent abdominal surgery on rocking chair exercise.
- Association between the selected demographic variable and level of bowel function in control and experimental group using gastro resumption indicator..
- Association between the clinical variables and level of bowel function in control and experimental group using gastro resumption indicator.

Demographic variables of patient underwent abdominal surgery

Majority of patients who underwent abdominal surgery in both control and experimental group were in the age group of 20 to 40years (33.33%, 16.66%), between 41 to 49years (30%, 33.33%), male and female were equal (50%, 50%), higher secondary education (66.66%, 53.33%) married (93.33%, 96.66%), Hindus (93.33%,

93.33%) and had monthly income of < 30,000 Rs per month (53.33%, 50%) respectively.

Postoperative ileus is a temporary impairment of gastrointestinal motility that commonly occurs after abdominal surgery. Although the literature regarding the incidence of postoperative ileus is limited, the incidence rates appear to vary by the type of surgery.

It is true that age has an impact on postoperative ileus. As the age advances postoperative complications will be more. The increase in postoperative morbidity and mortality rates associated with aging is a result of the increase in general postoperative complications, in particular, pneumonia and cardiovascular complications. Age as such does not represent a contraindication for surgical treatment. The short-term outcome and quality of life are of overriding importance for the geriatric patient.

According to Frank Marusch (2005) and other researchers, there is no gender difference in postoperative ileus. In my studies also the gender is equally affected (50%, 50%).

In educational status, significant number of patients had only higher secondary education where they may not be able to understand the disease condition and the management and also the postoperative complication that would arise from several factors compare to those who underwent higher degree education since the latter can

understand and learn about disease and management from various sources such as Internet and books.

Majority of the patients were married (93.33%, 96.66%). According to Jeffrey study from Journal of Gynecology, most of the female patients underwent total hysterectomy and myomectomy (premenopausal) women and were married.

Regarding religion, the study findings reveal that Hindus (93.33%, 93.33%), are the majority which may be due to the predominance of Hindus in our country. Regarding income significant number of patients had less than 30,000 Rs/month which was not significant with the bowel function.

Clinical variables of patients underwent abdominal surgery

Most of the patients in control and experimental group who underwent abdominal surgery had the body mass index of < 25 (56.66%, 46.66%), no habit of drinking (56.66%, 66.66%) and not underwent abdominal surgery previously (70%, 50%). Majority of them were non vegetarians (80%, 80%). Hundred percentage of patients had usual bowel pattern once in a day and not used any laxatives at home, pre operative bowel preparation of giving enema and keeping NBM. General anesthesia were used (93%, 100%), NG tube present postoperatively for decompression (73.33%, 63.33%), received non opioid medication as an analgesic (80%, 70%), and underwent intestinal related surgery (13.33%, 20.00%), gastric related surgery (30%, 23.33%), liver and pancreas related (20%, 20%), reproductive related (36.66%, 36.66%) in control and experimental group respectively.

In the study reveals that most of the patient who underwent abdominal surgery were having body mass index of <25 % (56.66%, 46.66%). It is true that that body mass index >30 have effect on postoperative recovery. Increased body mass index lead to longer stay in the hospital compared to low body mass index according to Cana Delaney(2005) from Diseases of the colon and rectum. In current study even though most of the patients had low body mass index they had delayed resumption of bowel function may be due to sedentary life style of patient or loss of muscle tone of abdominal muscles such as pendulous or flabby abdomen.

Most of the patient did not have the habit of drinking (56.66%, 66.66%).Drinking is not the indicator or risk factor for development of postoperative ileus. Same way in this study also drinking was not related for development of postoperative ileus.

In the current study most of the patients were not having co morbid illness (60%, 56.66%). Various study reported that co morbid illnesses have strong effect on post operative complications but not particularly post operative ileus. As various studies suggest, co morbid illness did not have much impact on postoperative ileus in this study also.

In the study significant number of patient underwent surgery for reproductive problem i.e for total abdominal hysterectomy. Many other patients also underwent surgery but different types of abdominal surgery. Study reveals postoperative ileus occurs any type of abdominal surgery but paralytic ileus extended many days in

intestinal surgery comparatively to other abdominal surgeries. All the patient who underwent abdominal surgery had postoperative ileus but the time of bowel function varies depends upon the type of surgery.

Hundred percentage of patient had usual bowel pattern and not used any laxatives preoperatively which was very important in assessing because if any patient had bowel problem and used any form of laxatives would had impact on bowel function postoperatively . Also (100%) had preoperative preparation of nil by mouth and were given enema which all will have impact on paralytic ileus directly or indirectly.

Majority of the patient were non vegetarians (80%, 80%), underwent surgery under general anaesthesia (93.33%, 100%), had NG tube for decompression.Regarding the factors that affected the restoration of gastrointestinal motility, resection operation type, longer operation period, longer opioid analgesics use period, longer nasogastric catheter use period, and the presence of systemic inflammation were shown to retard bowel motility for 3 days or more according to Massey (2010).

In the present study non vegetarian was one of the factor for postoperative ileus. The other factors were similar to that of Massey had stronger effect on resumption of bowel function.

Moore et al. (1995), despite the advancements in surgical techniques and preoperative care, postoperative ileus continues to be the most common complication of abdominal surgery. In essence, postoperative ileus can be described as the deceleration

or arrest of intestinal motility following abdominal surgery or intra-abdominal trauma. Initially presenting with abdominal distension and cessation of defecation, postoperative ileus progresses with nausea, vomiting, and abdominal cramps. This condition, which delays resumption of normal nutrition and mobilization, is one of the most significant causes of extended hospitalization following surgery.

Frequency and percentage distribution of level of bowel function after rocking chair exercise of patients underwent abdominal surgery.

Most of the patients (60%) had resumed partial function of bowel between (14 to 28hrs) postoperatively in the control group whereas in experimental group 70% of patients had resumed complete bowel function (<13hrs) after surgery. Absence of bowel function (>29hrs) was present in some of the patients (13.33%, 6.66%) postoperatively in both control and experimental group.

These findings were similar to the study conducted by Massey R L. (2010) to evaluate the effects of a rocking intervention in cancer patients undergoing surgery.. There were no differences in the rocking and non rocking groups in age, gender, ethnicity, marital status, or diagnosis. Surgical procedures included colectomy, liver resection, small bowel resection, and exploratory laparotomy.. Patients who used the rocking chairs after their procedures passed flatus on an average of 16.8 hours sooner than non rocking patients.

Since the early 1900s, post-surgical patient orders and suggestions to patients by physicians have included getting out of bed, sitting in a chair and ambulating

beginning the first postoperative day and increasing the amount of time spent out of bed in the chair and distance ambulated each day. Waldhausen and Schirmer (1990) were the first to identify the positive effects of being out of bed and ambulating after abdominal surgery and praised the positive effects but did not suggest optimal amounts spent completing each activity. Others have more recently included these two activities as components of the concept that a multi-modal approach is needed to resolve such a multi-factorial phenomenon as POI as of by Holte & Kehlet 2001, 2002.

Thus the study recommends that the early ambulation of any surgical patient is very important for speady recovery and wound healing and also reduces the length of stay in the hospital or reduces length of hospitalization.

Comparing of mean and standard deviation on level of bowel function by control and experimental group of patients who underwent abdominal surgery.

In control and experimental group, there was a significant difference in the mean (47.86, 28.86), and standard deviation (16.87, 15.40) in the level of bowel function respectively. The‘t’ value of 16.15 is highly significant at (P< 0.001).

According to Massey (2010), patients who used the rocking chairs after their procedures passed flatus on an average of 16.8 hours sooner than non rocking patients. Although patients in the non rocking group, on an average, used more pain medication, the difference between group was not significant (36.48 mg versus 29.35 mg, p=0.604). Unlike previous studies, time of discharge was not significantly different either, being 7.69 days for the rocking group and 7.89 days for the non rocking group (p=0.837).

Observations made by the researcher Welk et al 2000 reveal that the pedometer worn at the waist line is not appropriate for use with the post abdominal surgical patient as a recorder of activity distance. The patients walk very cautiously and not vigorous enough to present a consistent rise and fall of the iliac crest which is essential to stimulate the armature that records steps by the Yamax Digi-Walker pedometer. This measure can be used to assess the effectiveness in future research.

Yet another controversial measure reported in the literature related to assessing the return of bowel sounds as an indicator of the return of gastrointestinal function from the study from 1990 to Madson et al 2005, bowel sounds were not used as an indicator of POI but as the standard of care for all postoperative patients requires that nurses assess and record the absence and presence of bowel sounds on a regular basis each postoperative day. Gastrointestinal resumption indicator tool that has been prepared by the researcher in this study will help in better prediction than assessing only bowel sounds.

Frequency and percentage distribution on level of satisfaction of patients on rocking chair exercise.

When assessing the level of satisfaction of patients regarding rocking chair exercises post operatively, it is noted that almost all the patients in experimental group were highly satisfied with the rocking chair exercise. The problem of postoperative ileus (POI) remains a troubling phenomenon that complicates the comfort and recovery of abdominal surgery patients. Patients felt and expressed that the rocking chair provided was appropriate, useful, relaxes and also promotes comfort.

Waldhausen et al (1990) report the study that the rocking intervention was successful in reducing the duration of POI as evidenced by shorter times to first passage of postoperative flatus for patients who followed the rocking protocol rather than the non rocking standard of care. That gives the patients a sense of well being and satisfaction towards rocking chair exercise. It also indicated that the patient who were under stress and anxiety about their conditions post operatively, were relaxed when rocking, pain was minimized and also reduced duration of ileus, able to pass flatus fast and abdominal discomfort was reduced that makes them highly satisfied.

These findings can be disseminated to the post op settings to include exercise to the post operative patient along with ambulation.

Association between the selected demographic variable and level of bowel function in control and experimental group using gastro resumption indicator.

Chi square test was used to find out the association between demographic variables and level of bowel function. There was an association between gender of the patient (χ^2=9.37, df=1), ($p<0.01$) in control and (χ^2=9.6, df=1), ($p<0.01$) in experimental group of patients who had undergone abdominal surgery and level of bowel function. But other demographical variables did not show any significance association with bowel function in the control group and experimental group. Hence null hypothesis Ho_2 was partially rejected.

These findings were not similar to the study conducted by Massey (2010) to evaluate the effects of a rocking intervention in cancer patients undergoing surgery. There were no differences in the in age, gender, ethnicity, marital status, or diagnosis.

The current study which showed the association of gender may be attributed to the fact that most of the female patient underwent hysterectomy and some patients had laproscopic surgery where there were no drains and mobility was encouraged earlier compared to patients who underwent other major surgeries like whipple's operation.

Association between the clinical variables and level of bowel function in control and experimental group using gastro resumption indicator

There was a significant association between the diseases (χ^2=6.91, df=1), ($p<0.01$), the surgery that the patient underwent (χ^2=6.91, df=1), ($p<0.01$), presence of NG tube for decompression postoperatively(χ^2=5.10, df=1), ($p<0.05$) pain medication that was used(χ^2=5.86, df=1), ($p<0.05$) and the route of medication of analgesic(χ^2=7.95, df=1), ($p<0.01$) with the level of bowel function in control group.

There was significant association between the disease (χ^2=8.68, df=1), ($p<0.01$), the surgery that the patient underwent(χ^2=8.68, df=1), ($p<0.01$), presence of NG tube for decompression (χ^2=12.12, df=1), ($p<0.001$), pain medication that was used (χ^2=11.42, df=1), ($p<0.001$) and the route of medication (χ^2=11.42, df=1), ($p<0.001$) with the level of bowel function in experimental group. Other clinical variables did not have the association with the level of bowel function. Hence, the null hypothesis Ho_3 was partially rejected.

These findings were similar to the study of Holte (2005), use of pain medication and route of pain medication has an effect on postoperative ileus i.e. prolonged use of opioids reduces gastric motility function compared to other analgesics, also most effective method of reducing ileus is by using epidural blocade with local anaesthetic. In

present study, patients were given general anaesthesia and also some patients were given opioids via epidural as an analgesic postoeratively.

Massey (2007) also supported the findings, that the type of surgery has an impact on postoperative ileus.. The surgery was mostly colectomy, liver resection, or small bowel resection and most patients had previous abdominal surgery. The patients had longer duration of ileus compared with other non intestinal surgeries. In present study the type of surgery had association with the level of bowel function

Many nurses aware of taking care of patient who underwent abdominal surgery postoperatively by monitoring the vital signs and administration of medications, but are not aware of the need to assess the patients for bowel sounds. This study suggests for the nurses to practice routinely the assessment of bowel function and intervention to reduce the duration of ileus.

Summary

This chapter has dealt with the objectives of the study, major findings of the demographic and clinical variables, comparison of level of bowel function before and after rocking chair exercise of patients who underwent abdominal surgery, association between selected demographic variables and clinical variables on the level of bowel function of patients who underwent abdominal surgery in both the groups, and level of satisfaction of post abdominal surgery patients on rocking chair exercise.

CHAPTER VI

SUMMARY, CONCLUSION, NURSING IMPLICATIONS AND RECOMMENDATIONS

The major and important part of research lies on the report of the research and findings. This chapter deals gives brief account of innovative methods that has been used and how it can be applied in the nursing service and education as well as in research and also it gives various suggestion and nursing implications. This study intended to analyze the effectiveness of rocking chair exercise on level of bowel function of patients underwent abdominal surgery.

Summary

An Experimental Study to Assess the Effectiveness of Rocking Chair Exercise in Level of Bowel Function among Patients Who Underwent Abdominal Surgery at Apollo Main Hospital, Chennai..

Objectives of the Study

1 To assess the level of bowel function before and after rocking chair exercise in the control and experimental group of patients who underwent abdominal surgery.

2 To determine the effectiveness of rocking chair exercise by comparing the level of bowel function in the control and experimental group of patients who underwent abdominal surgery.

3 To determine the level of satisfaction on rocking chair exercise among experimental group of patients who underwent abdominal surgery.

4 To find out the association between the selected demographic variables and the level of bowel function before and after rocking chair exercise in control and experimental of patients who underwent abdominal surgery.

5 To find out the association between the selected clinical variables and the level of bowel function before and after rocking chair exercise in control and experimental group of patients who underwent abdominal surgery.

Null hypotheses

H_{o1} There will be no significant difference in level of bowel function before and after rocking chair exercise in the control and experimental group of patients who underwent abdominal surgery.

H_{02} There will be no significant association between selected demographical variables and level of bowel function before and after rocking chair exercise in control and experimental group of patients who underwent abdominal surgery.

H_{03} There will not be any significant association between selected clinical variables and level of bowel function before and after rocking chair exercise in control and experimental group of patients who underwent abdominal surgery**.**

The conceptual frame work was based on the "Modified Ernestine Wiedenbach's helping art of clinical nursing theory" (1964) to be appropriate for the current study. This involves the nurse coordinating with the patient, where in, a plan is formulated to meet the patient's needs based on available resources and implementation.

Review of literature and guidance by expert formed the foundation of development of tool.

A true experimental research design was selected to achieve the objectives of the study. The study utilized the experimental approach and the study was conducted in Apollo Main Hospital. Sixty patients who underwent abdominal surgery were selected by simple random sampling technique. Out of which 30 patients were taken for control group and 30 patients were taken for experimental group who satisfied the inclusion criteria.

The investigator used the demographic variable proforma, clinical variable proforma, gastrointestinal resumption indicator tool to assess the level of bowel function, checklist to assess the satisfaction level on rocking chair exercises. The data collection tools were validated and reliability was established. After the pilot study, the data collection for the main study was conducted. The collected data was tabulated and analyzed using descriptive and inferential statistics.

Major Findings of the Study

Demographic variables of patients who underwent abdominal surgery

Majority of patients who underwent abdominal surgery in both control and experimental group were in age group of 20 to 40years (33.33%, 16.66%), 41 to 49years (30%, 33.33%), male and female were equal (50%, 50%), higher secondary education (66.66%, 53.33%) married (93.33%, 96.66%), Hindus (93.33%, 93.33%) and had monthly income of < 30,000 Rs per month (53.33%, 50%) respectively.

Clinical variables of patients who underwent abdominal surgery

Most of the patients who underwent abdominal surgery had the body mass index of < 25 (56.66%,46.66%), no habit of drinking (56.66%, 66.66%) and not underwent abdominal surgery previously (70%, 50%) in control and experimental group respectively. Majority of them were non vegetarians (80%, 80%), had usual bowel pattern once in a day and not used any laxatives at home, pre operative bowel preparation of giving enema and keeping NBM were (100%, 100%), general anaesthesia were used (93%,100%), NG tube present postoperatively for decompression (73.33%, 63.33%), received non opioid medication as an analgesic (80%, 70%), received analgesic intravenously (77%, 70%) and underwent intestinal related surgery (13.33%. 20.00%), gastric related surgery (30%, 23.33%), liver and pancreas related (20%, 20%), reproductive related(36.66% , 36.66%) in control and experimental group.

Frequency and percentage distribution on level of bowel function of patients who underwent abdominal surgery after rocking chair exercise

Majority (60%) of patient had resumed partial function of bowel between the (14 to 28hrs) postoperatively in the control group, whereas in experimental group 70% of patients had resumed complete bowel function (<13hrs) postoperatively. Significant number of patients had absence of bowel function (13.33%, 6.66%) after surgery in both control and experimental group respectively.

Comparing of mean and standard deviation on level of bowel function in control and experimental group of patients who underwent abdominal surgery

In control and experimental group that there was significant difference in the mean (47.86, 28.86), and standard deviation (16.87, 15.40) with the level of bowel functio. The‘t’ value of 16.15 is highly significant at P< 0.001. Hence, the null hypothesis Ho_1 “There will be no significant difference in level of bowel function before and after rocking chair exercise in the control and experimental group of patients who underwent abdominal surgery” was rejected.

Frequency and percentage distribution on level of satisfaction of patients on rocking chair exercise

All the patients in experimental group were highly satisfied (100%) with the rocking chair exercise.

Association between the selected demographic variables and level of bowel function in control and experimental group using gastro resumption indicator

Chi square test was used to find out the association between selected demographic variables and inferred that there was an association between gender of the patient (χ^2=9.37, df=1), (p<0.01) in control and (χ^2=9.6, df=1), (p<0.01) in experimental group of patients who had undergone abdominal surgery and level of bowel function. But other demographical variables did not show any significance association (p<0.05) with bowel function in the control group and experimental group. Hence, the null hypothesis Ho_2 was partially rejected.

Association between the clinical variables and level of bowel function in control and experimental group using gastro resumption indicator

Chi square test was used to find out the association between selected clinical variable and inferred that There was a significant association between the diseases (χ^2=6.91, df=1), (p<0.01), the surgery that the patient underwent (χ^2=6.91, df=1), (p<0.01), presence of NG tube for decompression postoperatively(χ^2=5.10, df=1), (p<0.05) pain medication that was used(χ^2=5.86, df=1), (p<0.05) and the route of medication of analgesic(χ^2=7.95, df=1), (p<0.01) with the level of bowel function in control group.

There was significant association between the disease (χ^2=8.68, df=1), (p<0.01), the surgery that the patient underwent(χ^2=8.68, df=1), (p<0.01), presence of NG tube for decompression (χ^2=12.12, df=1), (p<0.001), pain medication that was used (χ^2=11.42, df=1), (p<0.001) and the route of medication (χ^2=11.42, df=1), (p<0.001) with the level of bowel function in experimental group. Other clinical variables did not have the association with the level of bowel function. . Hence null hypothesis Ho_3 was partially rejected.

Conclusion

There is a wide variety of alternative therapies which help in reduction of duration of ileus. It can be incorporated into the conventional care and practice. And the researcher from the results of her present study concluded that rocking chair exercise was effective in reducing the duration of ileus for patient who underwent abdominal surgery and it also minimizes the pain and promotes relaxation. Hence the therapy

should be integrated into the existing conventional care and is having a greater impact on health care provision.

Implications

The researcher has derived from the study, the following implications which are of vital concern in the field of nursing practice, nursing education, nursing administration and nursing research.

Nursing practice

The nurse has a vital role in the health educating the patients about various practices which will improve their health and develop different safe healthy habits in order to prevent complications and that delays discharge of patient from hospital. The nurse should educate the patients for early mobilization and prevention of infection due to immobilization. We need to incorporate evidence based practice in managing clients of patients underwent abdominal surgery. Also, the nurse as a team leader can plan and organize and co-ordinate activities for the patients, so that the incidence of complications due to immobilization, hospital stay and cost for the patient post operatively can be reduced.

Nursing education

The nurse educators should involve in teaching the students about various exercises that helps patient in clinical setting. Nurses should have knowledge about the factors, which enhance and reduce the paralytic ileus. Nurses can be educated about the early mobilization which has the multiple effect on post operative patients..

Integration of theory and practice is a vital need and it is important in nursing education. Various exercises for immediate post operative patients can be included in the theory as well as in their clinical practice. Nurses should be taught about the assessment of bowel function by using bowel resumption tool. Nurse educators should initiate protocol for assessing the bowel function on a routine assessment as like physical assessment and it should stressed to the nurses and student nurses and to be recorded in their nursing notes. Hence the nurse educator can lay emphasis on the exercises and early mobilization postoperatively and its relation to client's recovery.

Nurse educator should take initiative and periodically organize continuing nursing education programmes for the nurses on early mobilization and cost effective manners with modern technological visual aids in order to gain adequate knowledge regarding non pharmacological ways of reducing the incidence of paralytic ileus.. With changing health trends, nursing education must lay emphasis on exercises and early mobilization in reducing paralytic ileus and other complications.

Nursing administration

In today's technological advances and the ever growing challenges of the health care needs, the administrator have the highest responsibility in providing opportunity for the nurses to use different modes of therapy in reducing paralytic ileus.. This will enable the nurses to update their knowledge, acquire special skills in managing the clients of patients who have undergone abdominal surgery.

Nurse administrator should take adequate steps with the growing bodies in formulating policies and protocols in providing patient education and plans for man power, money, material, methods and time to conduct successful and useful patient education programmes. Nurse administrator should provide opportunity for the nurses to attend the various training programmes.

Nursing research

As a result of growing demand, there is a heightened urgency to expand the evidence base to support for early mobilization. There is a need for extensive and intensive research in this area to generate more specific data base and to identify the benefits of the exercise and provide much information to practice. It opens a big avenue for research on innovative, alternative methods to reduce the paralytic ileus. Further research need to be conducted by the professional, and student nurses can conduct further studies on the impact of various alternative methods for treating the clients with paralytic ileus., so as to generate more scientific base.

Dissemination of the findings can be done through conference, seminar, publication in professional, national, international journals and World Wide Web. More research needs to be conducted with the use of locally available resources in reducing the paralytic ileus. More theories can be generated based on the research findings.

Recommendations

The researcher recommends the following studies

- Rocking chair exercise must be mandatory to all postoperative patients after any type of surgery.
- Rocking chair must be kept in all postoperative wards.
- Awareness about the rocking must be initiated among health care professionals.
- Rocking chair exercise could be included in preoperative teaching programme.
- The same study could be conducted on larger samples for better generalization.
- The study could be done in patients undergoing other surgeries and for various disease conditions.
- A study could be conducted to assess the level of knowledge among nurses regarding the rocking chair exercise for the management of patients post abdominal surgery.

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APPENDIX I

LETTER SEEKING PERMISSION TO CONDUCT THE STUDY

Apollo College of Nursing

(Recognised by the Indian Nursing Council and Affiliated to the Tamil Nadu Dr. M.G.R. Medical University, Chennai)

CO/0296/12 ***11.06.12***

To

Dr.Radha Rajagopalan
Director of Medical Education
Apollo Hospitals
21. Greams lane, off Greams Road
Chennai – 600 006

Respected Sir / Madam,

Sub.: *To request permission for research study – Reg.*

Greetings! *As part of the curriculum requirement our 2nd year M. Sc. (N) student Ms.Ramamurthy Priya has selected the following title for her research study.*

"An experimental study to assess the effectiveness of rocking chair exercise in bowel functioning level among patients who underwent for abdominal surgery at Apollo hospitals, Chennai."

So I kindly request your goodselves to permit her to conduct study in your esteemed institution.

Thanking You,

Latha

Dr. LATHA VENKATESAN
PRINCIPAL

She is permitted to do this study under Dr. RAJKUMAR

Radhakrishnan
12/6/12

IS/ISO 9001:2000

Vanagaram to Ambattur Main Road, Ayanambakkam, Chennai - 600 095.
Ph. : 044 - 2653 4387 Tele fax : 044 - 2653 4923 / 044- 2653 4386

APPENDIX II

ETHICAL COMMITTEE CLEARANCE LETTER

Ethics Committee

Apollo HOSPITALS
TOUCHING LIVES

30th August 2012

To,

Ms. Priya R,
2nd Year M.SC (Nursing),
Department of Medical Surgical Nursing,
Apollo College of Nursing,
Chennai.

Ref: An experimental study to assess the effectiveness of rocking chair exercise in level of bowel function among patients who underwent for abdominal surgery at Apollo Hospital, Chennai.

Sub: Approval of the above referenced project and its related documents.

Dear Ms. Priya,

Ethics Committee-Apollo Hospitals has received the following document submitted by you related to the conduct of the above-referenced study.

- Project proposal.
- Participant Consent Form.

The Ethics Committee-Apollo Hospitals reviewed and discussed the study proposal documents submitted by you related to the conduct of the above referenced study at its meeting held on 29th August 2012.

The following Ethics Committee Members were present at the meeting held on 29th August 2012.

Name	Profession	Position in the committee
Mr. S. S. Narayanan	Ethicist	Chairman
Dr. Rema Menon	Clinician	Member Secretary
Dr. Radha Rajagopalan	Clinician	EC-Member
Dr. Krishnakumar	Clinician	EC-Member

Apollo Hospitals Enterprise Limited
21, Greams Lane, Off Greams Road, Chennai - 600 006
Tel : 91 - 44 - 2829 3333 Extn : 6008, 91 - 44 - 2829 5465 Extn : 6639 Fax : 91 - 44 - 2829 4449
E - Mail : ecapollochennai@gmail.com

Dr. Vijaya Kumar	Clinician	EC-Member
Dr. Clive Fernandes	Consultant Clinical Pharmacologist	Basic Medical Scientist
Dr. Nalini Roa	Social Worker	EC-Member
Ms. N. Suseela	Retired English Teacher	Layperson
Ms. Maimoona Badsha	Lawyer	Lawyer
Dr. Paul Dilipkumar	Clinician	EC-Member
Dr. V. Balaji	Clinician	EC-Member
Dr. M. A. Raja	Consultant Medical Oncologist	EC-Member

After due ethical and scientific consideration, the Ethics Committee has approved the above presentation submitted by you.

The EC review and approval of the report is only to meet their academic requirement and will not amount to any approval of their conclusions/recommendations as conclusive, deserving adoption and implementation, in any form, in any health care institution.

The Ethics Committee is constituted and works as per ICH-GCP, ICMR and revised Schedule Y guidelines.

With Regards,

Rema Menon

Date: 30/08/12

Dr. Rema Menon,
Ethics Committee-Member Secretary,
Apollo Hospitals, Chennai,
Tamil Nadu, India.

DR. REMA MENON
MEMBER SECRETARY
ETHICS COMMITTEE, APOLLO HOSPITALS
APOLLO HOSPITALS ENTERPRISE LIMITED
CHENNAI-600 006, TAMILNADU

APPENDIX III
LETTER SEEKING PERMISSION FOR CONTENT VALIDITY

From
Ms. Ramamurthy priya
M.Sc(Nursing) Second Year,
Apollo College of Nursing,
Chennai – 600 095.

To

Forwarded Through:
Dr. Latha Venkatesan,
Principal,
Apollo College of Nursing.

Sub: **Requesting for opinions and suggestions of experts for establishing content validity for research tool**.

Respected Madam,

I am a postgraduate student of the Apollo College of Nursing. I have selected the below mentioned topic for research project to be submitted to The Tamil Nadu Dr. M.G.R Medical University, Chennai as a partial fulfillment of Masters of Nursing Degree.

TITLE OF THE TOPIC:

An experimental study to assess the effectiveness of rocking chair exercise in level of bowel function among patients underwent abdominal surgery at Apollo hospital, Chennai..

With regards may I kindly request you to validate my tool for its appropriateness and relevancy. I am enclosing the Background, Need for the study, Statement of the problem, Objectives of the study, Demographic Variable Proforma, Clinical Variable Proforma, observational checklist for respiratory outcome, practice of nurse's checklist and rating scale on the satisfaction of nurses. I would be highly obliged and remain thankful for your great help if you could validate and send it as soon as possible.

Thanking you,

Date: **Yours sincerely,**
Place: **(Ramamurthy priya)**

APPENDIX IV

LIST OF EXPERTS

1. **Dr. Latha Venkatesan, M.Sc(N), M.Phil (N)., Ph.D (N)**
   Principal and Professor in Maternity Nursing,
   Apollo College of Nursing,
   Chennai- 600 095

2. **Prof. Lizy Sonia. A, M.Sc (N), Ph.D (N)**
   Vice Principal and Professor in Medical Surgical Nursing,
   Apollo College of Nursing,
   Chennai-600 095

3. **Prof. K. Vijayalakshmi, M.Sc (N), Ph.D (N)**
   Professor in Psychiatric Nursing,
   Apollo College of Nursing,
   Chennai- 600 095

4. **Prof. Shobana, M.Sc(N),**
   Professor in Community Health Nursing,
   Apollo College of Nursing,
   Chennai- 600 095

5. **Mrs. Nesa Sathya Satchi, M.Sc(N),**
   Reader in Pediatric Nursing,
   Apollo College of Nursing,
   Chennai- 600 095

6. **Mrs. Jaslina Gnana Rani .J, M.Sc(N),**
   Reader in Medical Surgical Nursing,
   Apollo College of Nursing,
   Chennai- 600 095

7. **Mrs. Sasi Kala, M.Sc(N),**
   Reader in Medical Surgical Nursing
   Apollo College Of Nursing
   Chennai-600 095

8. **Mrs. Kanchana, M.Sc (N)., M.Sc(Psy),**
   Reader in Medical Surgical Nursing,
   Apollo College of Nursing,
   Chennai-600 095

9. **Dr. Rajkumar palaniappan**
   MS,MMAS(UK),FICS(USA),DMAS,FMAS,FLS
   Consultant Gastro and Obesity
   Apollo Main Hospital, Chennai- 6000020.

APPENDIX V

CERTIFICATE FOR CONTENT VALIDITY TO WHOMSOEVER IT MAY CONCERN

This is to certify that tools and content for the research study developed by II year M.Sc. (Nursing) student of Apollo College of Nursing for her dissertation "An experimental study to assess the effectiveness of rocking chair exercise in level of bowel function among patients underwent abdominal patients at selected hospitals, Chennai." was validated.

Signature of the Expert

APPENDIX VI

RESEARCH PARTICIPANT CONSENT FORM

Dear Participant,

Department of Medical and surgical nursing, Apollo College of Nursing, is conducting research study on "**Effectiveness of Rocking chair exercise in level of bowel function among patients who underwent abdominal surgery".** The findings of the study will be helpful in improving patient services with regards to bowel function and minimizing the discomfort in post operative period.

I hereby seek your consent and co-operation to participate in the study. The information collected will be kept confidential and anonymity will be maintained.

Signature of the researcher

I ……..Hereby consent to participate and undergo the study

Place:

Date:

Signature of the participant

பங்கேற்பாளரின் ஒப்புதல் படிவம்

அன்பார்ந்த பங்கேற்பாளரே

அப்பல்லோ செவிலியர் கல்லூரியில் மருத்துவ அறுவை சிகிச்சை துறையில் ”வயிற்று அறுவை சிகிச்சையை செய்து கொண்ட நோயாளிகள் ஆடும் நார்காலியின் பயிற்சிக்குப் பிறகு குடல் செயல்பாடு திறன் குறித்து ஆய்வு செய்யப்படுகிறது. இந்த ஆய்வில் கண்டுபிடிப்புகள் அறுவை சிகிச்சைக்கு பிறகு நோயாளிகளின் சேவைகளை மேம்படுத்தவும், குடல் செயல்பாட்டின் அசௌகரிம் குறைக்கவும் உதவியாக இருக்கும்.

நான் இதன் மூலம் இந்த ஆய்வின் பங்கேற்க உங்கள் அனுமதியையும், ஒத்துழைப்பையும் நாடுகின்றேன். சேகரிக்கப்பட்ட தகவல்கள் மற்றும் தங்கள் பெயர் ரகசியமாக பராமரிக்கப்படும்.

ஆராய்ச்சியாளர் கையொப்பம்

நான்..... இதன் மூலம் ஆய்வில் பங்கேற்க ஒப்புதல் அளிக்கிறேன்.

இடம்:

தேதி:

பங்கேற்பாளரின் கையொப்பம

APPENDIX VII

CERTIFICATE FOR ENGLISH EDITING

TO WHOMSOEVER IT MAY CONCERN

This is to certify that the dissertation **"An Experimental Study to Assess the Effectiveness of Rocking Chair Exercise in Level of Bowel Function among Patients Who Underwent Abdominal Surgery in Apollo Hospital, Chennai."** by Ms. Ramamurthy Priya, II year M.Sc (N), Apollo College of Nursing was edited for English Language appropriateness by Prof. J. GIFTLIN (MADURAI).

Signature

J. GIFTLIN IYADURAI M.A.,M.Phil.,
Assistant Professor of English
NM Christian College,
Marthandam - 629 65

APPENDIX VIII

CERTIFICATE FOR TAMIL EDITING

TO WHOMSOEVER IT MAY CONCERN

This is to certify that the dissertation **"An Experimental Study to Assess the Effectiveness of Rocking Chair Exercise in Level of Bowel Function among Patients Who Underwent Abdominal Surgery in Apollo Hospital, Chennai."** by Ms. Ramamurthy Priya, II year M.Sc (N), Apollo College of Nursing was edited for Tamil Language appropriateness by ……

Signature

மா.தமிழரசி, எம்.ஏ,பி.எட்
உதவி பட்டதாரி ஆசிரியர்
அ.மே.பள்ளி
நெம்மேலி - 603 104.

APPENDIX IX

PLAGIARISM DETECTOR ORIGINALITY REPORT

Plagiarism Detector - Originality Report

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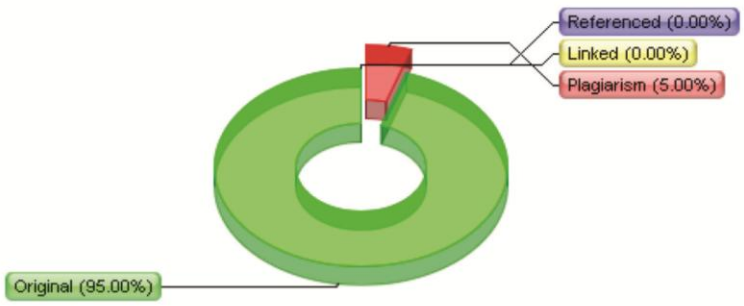

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APPENDIX - X

DEMOGRAPHIC VARIABLE PROFORMA

Purpose

This proforma is used to measure the demographic variables such as age, gender, educational status, marital status, religion and income.

Instructions

The researcher collects the following information from the research participants by asking question in the interview form and marks appropriate tick (√) mark in the space provided as per their response.

Sample number:-

1. Age in years

1.1 20-40 years ☐

1.2 40-49 ☐

1.3 50 - 59years ☐

1.4 > 60 years ☐

2. Gender

2.1 Male ☐

2.2 Female ☐

3. Educational status

3.1 Illiterate ☐

3.2 Primary education ☐

3.3 Secondary education ☐

3.4 Higher secondary level ☐

3.5 Degree and above ☐

4. Marital status

4.1 Unmarried ☐

4.2 Married ☐

4.3 Widow / widower ☐

4.4 Divorce/separated ☐

5. Religion

5.1 Hindu ☐

5.2 Christian ☐

5.3 Muslim ☐

5.4 Others (specify) ☐

6. Income (Monthly in Rupees)

6.1 <30000 ☐

6.2 30001 – 60000 ☐

6.3 >60000 ☐

சமூக அறிவியல் பட்டியல்

நோக்கம்

வயது, பாலினம், மதம்,கல்வி நிலை, திருமண நிலை, மாதாந்திர வருமானம் போன்ற மக்களியல் சார்ந்த மாற்றத்தக்கவைகளை அளவிடுவதற்கு இப்படிவம் பயன்படுத்தபடுகிறது.

அறிவுறுத்துதல்

ஆய்வாளர் பங்கேற்பாளரிடம் நேர்முக கலந்துரையாடல் மூலம் கேட்கபடும் கேள்விகளுக்கு குறிப்பிடப்பட்ட இடத்தில் சரியான பதிலை குறிப்பிடவும்

1. வயது

1.1 20-40 ஆண்டுகள் ☐

1.2 41-49ஆண்டுகள் ☐

1.3 50-59 ஆண்டுகள் ☐

1.4 >60 ஆண்டுகள் ☐

2. பாலினம்

2.1 ஆண் ☐

2.2 பெண் ☐

3. கல்வி

3.1 கல்வியறிவு அற்றவர் ☐

3.2 தொடக்க கல்வி ☐

3.3 நடுநிலைக் கல்வி ☐

3.4 உயர் நிலைக்கல்வி ☐

3.5 பட்டபடிப்பு மற்றும் அதற்கு மேல் ☐

4. திருமணநிலை

4.1 திருமணமாகாதவர் ☐

4.2 திருமணமானவர் ☐

4.3 விதவை/மனைவி இழந்தவர் ☐

4.4 விவாகரத்தானவர்/பிரிந்து வாழ்பவர் ☐

5. மதம்

5.1 இந்து ☐

5.2 இஸ்லாமியர் ☐

3.3 கிறிஸ்துவர் ☐

3.4 பிற (குறிப்பிடவும்) ☐

6. மாதாந்திர வருமானம்

6.1 <30,000 ☐

6.2 30,001-60,000 ☐

6.3 >60,000 ☐

APPENDIX - XI

CLINICAL VARIABLE PROFORMA

Purpose

This proforma is used to assess the risk factors to undergo for abdominal surgery as well as level of bowel functioning status post abdominal surgery.

Instructions

The researcher collects the following information from the research participants by asking question in the interview form and marks appropriate tick (√) mark in the space provided as per their response.

1. Body mass index

1.1 < 25 ☐

1.2 25-29 ☐

1.3 Above 30.0 ☐

2. Habit of drinking

2.1 No ☐

2.2 Daily ☐

2.3 Occasional ☐

3. Type of diet

3.1 Vegetarian ☐

3.2 Non Vegetarian ☐

4. Previous history of abdominal surgery

4.1 Yes (specify) ☐

4.2 No ☐

5. Disease

5.1 Gastric related ☐

5.2 Intestinal related ☐

5.3 Liver & pancreas related ☐

5.4 Reproductive related ☐

6. Types of surgery

6.1 Gastric surgery ☐

6.2 Bowel surgery ☐

6.3 Liver & pancreas surgery ☐

6.4 LSCS & Hysterectomy ☐

7. Types of anaesthesia

7.1 General anaesthesia ☐

7.2 Spinal anaesthesia ☐

8. Co morbid illness

8.1 Diabetes ☐

8.2 Hypertension ☐

8.3 Heart Disease ☐

8.4 Nil ☐

9. Usual bowel pattern

9.1 Once in a day ☐

9.2 Once in two days ☐

10. Use of laxatives at home

10.1 Yes ☐

10.2 No ☐

11. Preoperative bowel preparation

11.1 Only NBM ☐

11.2 NBM & Enema ☐

11.3 NBM & Bowel wash ☐

12. Presence of Nasogastric tube

12.1 Yes ☐

12.2 No ☐

13. Pain medication

13.1 Opioid ☐

13.2 Non opioid ☐

14. Pain medication route

14.1 Intravenous ☐

14.2 Intramuscular ☐

14.3 epidural ☐

14.4 others ☐

15. Nature of surgery

15.1 Laparoscopic surgery ☐

15.2 Open abdominal surgery ☐

APPENDIX - XII

ASSESSING THE GASTRO INTESTINAL RESUMPTION INDICATOR OF PATIENTS UNDERWENT ABDOMINAL SURGERY

Purpose

This assessment gives the information regarding the duration of ileus of patients underwent open and closed abdominal surgery.

Instruction:

Patients who underwent abdominal surgery (laprascopic surgery was assessed for bowel sounds, time of passing flatus after 6 hours of transfer from recovery room, patients underwent open abdominal surgery assessed after 12 hrs of transfer from recovery room). The score is given 1 from 8 hours after surgery and every 2 hours subsequent score is given for both experimental and control group. Experimental group was given intervention of rocking chair exercise, control group was followed with routine care.

Score <13 – complete bowel function

Score 14 – 28 – partial function of bowel

Score > 29 – absence of bowel function

Score	1	2	3	4	5	6	7	8	9	10
Duration of ileus in hours	8	10	12	14	16	18	20	22	24	26

Score	11	12	13	14	15	16	17	18	19	20	21	22
Duration of ileus in hours	28	30	32	34	36	38	40	42	44	46	48	50

Score	23	24	25	26	27	28	29	30	31	32
Duration of ileus in hours	52	54	56	58	60	62	64	66	68	70

BLUE PRINT ON

RATING SCALE TO ASSESS THE LEVEL SATISFACTION OF PATIENTS ON ROCKING CHAIR EXERCISE WHO UNDERWENT ABDOMINAL SURGERY

1	Research approach	1,2,3,4,6	5	38.46%
2	Rocking chair performance	5,8,13	3	23.07%
3	Comfort	7,9,10,11,12	5	38.46%
	Total	**-**	**13**	**100%**

APPENDIX XIII

CHECKLIST FOR LEVEL OF SATISACTION ON ROCKING CHAIR EXERCISE OF PATIENTS UNDERWENT ABDOMINAL SURGERY

Purpose

This checklist is designed to assess and ask the level of satisfaction of abdominal surgery patients regarding rocking chair and this is assessed by researcher after the treatment. The score is given

"0" Dissatisfied,

"1" Moderately satisfied,

"2" Highly satisfied

Instruction:

The researcher will ask study participants and put the tick mark against the appropriate response. Responses extend from satisfied to dissatisfied.

S No	Items	Highly Satisfied	Moderately Satisfied	Dissatisfied
1	Consent form are obtained prior to study			
2	Explanation about the Rocking chair exercise.			
3	Demonstration of rocking			
4	Rocking chair given at appropriate time.			
5	Pain is assessed and administered prior to rocking			

6	Assisted in performing rocking chair			
7	Comfortable in rocking chair			
8	Able to sit and rock as per instruction			
9	Flatus passed after rocking chair exercise			
10	Bowel function achieved			
11	Abdominal distension or discomfort minimized			
12	Promotes relaxation			
13	Feeling of ease after rocking chair exercise			

Score interpretation

<30% - Dissatisfied

31-65% - Satisfied

>66% - Highly satisfied

அறுவை சிகிச்சைக்குப் பிறகு நோயாளிகள் ஆடும் நாற்காலியின் பயிற்சியின் திருப்தியை மதிப்பிடும் பட்டியல்

நோக்கம்

நோயாளிகள் அடிவயிற்று அறுவை சிகிச்சைக்குப் பிறகு ஆடும் நாற்காலி பயிற்சி தொடர்பான திருப்தி அளவை வடிவமைக்கப்பட்டுள்ள மதிப்பீட்டு அளவு மூலம் ஆராய்ச்சியாளரால் கனிக்கப்படுகிறது. இந்த மதிப்பீடு இவ்வாறு மதிப்பிடப்படுகிறது.

விதிமுறைகள்

ஆராய்ச்சியாளர் பங்கேற்பாளரிடம் கேட்கப்பட்ட சரியான பதிலுக்கு எதிராக சரியான பதிலை மார்க் செய்யும் படி கேட்டு கெள்ளப்படுகிறார்கள். பதில் முழுமையான திருப்தியிலிருந்து திருப்தியின்மை வரை நீட்டிக்கப்படுகிறது.

"0" - திருப்தியின்மை

"1" - மிதமான திருப்தி

"2" - முழுமையான திருப்தி

வ.எண்	உருப்படி	முழு திருப்தி	மிதமான திருப்தி	திருப்தியின்மை
1.	அனுமதி (அ) ஒப்புதல் பெறுதல்			
2.	ஆடும் நாற்காலியின் பயிற்சி பற்றி விளக்கம்			
3.	ஆடும் நாற்காலி பயிற்சி செய்து காட்டுதல்			
4.	பொறுத்தமான நேரத்தில் ஆடும் நாற்காலி கொடுத்தல்			
5.	பயிற்சியின் முன் வலி மதிப்பீடு செய்து வலி மருந்து அளித்தல்			
6.	ஆடும் நாற்காலியில் பயிற்சி செய்ய உதவுதல்			

7.	ஆடும் நாற்காலி பயிற்சியின் வசதி			
8.	ஆடும் நாற்காலியில் கற்பித்தப்படி பயிற்சி செய்தல்			
9.	ஆடும் நாற்காலி பயிற்சிக்கு பின்னர் வாயு பிரிதல்			
10.	குடல் செயல்பாடு அடைதல்			
11.	வயிற்று பாரம் (அ) அசௌகரியம் நீக்கப்படுதல்			
12.	ஆடும் நாற்காலியில் ஓய்வு ஊக்குவிக்கப்படுகிறது			
13.	ஆடும் நாற்காலி பயிற்சியின் போது எளிய உணர்வு			

இந்த மதிப்பீடு

< 30% - திருப்தியின்மை

31-65% - மிதமான திருப்தி

> 60% - மிகவும் திருப்தி

APPENDIX XIV

DATA CODE SHEET

Age in years	**AG**
20-40 yrs	1
41-49yrs	2
50-59 yrs	3
60 yrs	4
SEX	**SX**
Male	1
Female	2
Educational status	**ES**
Illetrate	1
Primary education	2
Higher secondary education	3
Degree and above	4
Marital status	**MS**
Ummarried	1
Married	2
Religion	**R**
Hindu	1
Christian	2
Muslim	3
Income	**IC**
<30000	1
30.001 – 60,000	2
>60,000	3
Body mass index	**BMI**
<25	1
25 – 30	2
>30	3
Habit of drinking	**HOD**
No	1
Daily	2
Occasional	3
Type of diet	**TOD**
Vegetarian	1
Non vegetarian	2
Previous history of abdominal surgery	**PHAS**
Yes	1
No	2
Comorbid illness	**CI**
Diabetes	1
Hypertension	2
Heart disease	3
Nil	4
Usual bowel pattern	**UBP**
Once in a day	1
Once in two days	2
Use of laxatives at home	**UOL**
Yes	1
No	2
Diagnosis	**DX**
Gastric related	1
Intestinal related	2
Liver and pancreas related	3
Reproductive related	4
Types of surgery	**TOS**
Gastrectomy	1
Intestinal surgery	2
Liver and pancreas related surgery	3
Reproductive related surgery	4
Nature of surgery	**NOS**
Laproscopic	1
Open abdominal surgery	2
Preoperative bowel preparation	**PBP**
Only NBM	1
NBM & enema	2
MBM & bowel enema	3
Types of anaesthesia	**TOA**
General anaesthesia	1
Spinal anaesthesia	2
Presence of Nasogastric tube for decompression	**PNG**
Yes	1
No	2
Pain medication	**PM**
Opioid	1
Non opioid	2
Pain medication route	**PMR**
Intra venous	1
Intramuscular	2
Epidural	3
Others	4

APPENDIX XV

MASTER CODE SHEET

	Demographic variables						Clinical variable														
S.No	**AG**	**SX**	**ES**	**MS**	**R**	**IC**	**BM**	**HOD**	**TOD**	**PHAS**	**CI**	**UBP**	**UOL**	**DS**	**TOS**	**NOS**	**POP**	**TOA**	**PNG**	**PM**	**PMR**
1	1.3	2.1	3.4	4.2	5.1	6.2	1.1	2.3	3.2	4.2	5.4	6.1	7.2	8.2	9.2	10.2	11.2	12.1	13.2	14.2	15.1
2	1.1	2.1	3.3	4.2	5.1	6.1	1.1	2.1	3.2	4.2	5.4	6.1	7.2	8.2	9.2	10.2	11.2	12.1	13.1	14.2	15.1
3	1.3	2.1	3.4	4.2	5.1	6.2	1.1	2.3	3.2	4.2	5.4	6.1	7.2	8.1	9.1	10.2	11.2	12.1	13.1	14.1	15.3
4	1.4	2.2	3.3	4.2	5.1	6.2	1.1	2.1	3.1	4.1	5.2	6.1	7.2	8.2	9.2	10.2	11.2	12.1	13.1	14.2	15.1
5	1.3	2.1	3.3	4.2	5.1	6.1	1.2	2.3	3.2	4.2	5.1	6.1	7.2	8.2	9.2	10.2	11.2	12.1	13.1	14.2	15.1
6	1.1	2.2	3.2	4.2	5.1	6.1	1.1	2.1	3.2	4.2	5.4	6.1	7.2	8.1	9.1	10.2	11.2	12.1	13.1	14.1	15.3
7	1.4	2.1	3.4	4.2	5.1	6.2	1.1	2.3	3.2	4.2	5.1	6.1	7.2	8.3	9.3	10.2	11.2	12.1	13.2	14.1	15.3
8	1.1	2.1	3.3	4.1	5.3	6.2	1.1	2.3	3.2	4.2	5.1	6.1	7.2	8.3	9.3	10.2	11.2	12.1	13.1	14.1	15.3
9	1.3	2.1	3.3	4.2	5.1	6.1	1.1	2.3	3.1	4.2	5.4	6.1	7.2	8.3	9.3	10.2	11.2	12.1	13.1	14.1	15.3
10	1.4	2.1	3.3	4.2	5.1	6.1	1.1	2.3	3.2	4.2	5.1	6.1	7.2	8.3	9.3	10.2	11.2	12.1	13.2	14.2	15.3
11	1.3	2.1	3.3	4.2	5.1	6.1	1.2	2.3	3.1	4.1	5.2	6.1	7.2	8.2	9.2	10.2	11.2	12.1	13.1	14.1	15.3
12	1.1	2.2	3.2	4.2	5.1	6.2	1.1	2.1	3.2	4.2	5.4	6.1	7.2	8.4	9.4	10.1	11.2	12.1	13.2	14.2	15.1
13	1.1	2.2	3.3	4.2	5.1	6.3	1.1	2.1	3.2	4.2	5.4	6.1	7.2	8.4	9.4	10.1	11.2	12.1	13.2	14.2	15.1
14	1.1	2.2	3.3	4.2	5.1	6.1	1.1	2.1	3.1	4.1	5.1	6.1	7.2	8.4	9.4	10.1	11.2	12.1	13.2	14.2	15.1
15	1.1	2.2	3.3	4.2	5.1	6.2	1.1	2.1	3.3	4.1	5.4	6.1	7.2	8.4	9.4	10.1	11.2	12.1	13.2	14.2	15.1
16	1.1	2.2	3.4	4.2	5.1	6.2	1.2	2.1	3.2	4.1	5.4	6.1	7.2	8.4	9.4	10.1	11.2	12.1	13.2	14.2	15.1
17	1.2	2.2	3.4	4.2	5.1	6.2	1.1	2.1	3.2	4.2	5.3	6.1	7.2	8.4	9.4	10.1	11.2	12.1	13.2	14.2	15.1
18	1.2	2.2	3.4	4.2	5.1	6.1	1.3	2.1	3.2	4.2	5.3	6.1	7.2	8.4	9.4	10.1	11.2	12.1	13.2	14.2	15.1
19	1.2	2.2	3.3	4.2	5.1	6.1	1.2	2.1	3.2	4.2	5.4	6.1	7.2	8.4	9.4	10.2	11.2	12.1	13.2	14.2	15.1
20	1.2	2.2	3.3	4.2	5.1	6.1	1.2	2.1	3.2	4.2	5.4	6.1	7.2	8.4	9.4	10.2	11.2	12.1	13.2	14.2	15.1
21	1.1	2.2	3.3	4.2	5.1	6.2	1.2	2.1	3.2	4.1	5.4	6.1	7.2	8.4	9.4	10.2	11.2	12.1	13.2	14.2	15.1
22	1.2	2.2	3.3	4.2	5.1	6.1	1.2	2.1	3.2	4.1	5.1	6.1	7.2	8.4	9.4	10.2	11.2	12.1	13.2	14.2	15.1
23	1.3	2.1	3.3	4.2	5.1	6.2	1.1	2.3	3.2	4.2	5.1	6.1	7.2	8.3	9.3	10.2	11.2	12.1	13.2	14.2	15.1
24	1.2	2.2	3.4	4.2	5.1	6.1	1.2	2.1	3.1	4.2	5.4	6.1	7.2	8.3	9.3	10.2	11.2	12.1	13.2	14.2	15.1
25	1.3	2.1	3.3	4.2	5.1	6.2	1.2	2.3	3.2	4.1	5.1	6.1	7.2	8.1	9.1	10.2	11.2	12.2	13.2	14.2	15.1
26	1.2	2.1	3.3	4.2	5.1	6.2	1.2	2.3	3.2	4.2	5.4	6.1	7.2	8.1	9.1	10.2	11.2	12.1	13.2	14.2	15.1
27	1.1	2.1	3.4	4.1	5.3	6.1	1.3	2.3	3.2	4.2	5.4	6.1	7.2	8.1	9.1	10.2	11.2	12.1	13.2	14.2	15.1
28	1.3	2.2	3.3	4.2	5.1	6.1	1.1	2.1	3.1	4.1	5.4	6.1	7.2	8.1	9.1	10.2	11.2	12.1	13.2	14.2	15.1
29	1.2	2.1	3.3	4.2	5.1	6.1	1.1	2.3	3.2	4.2	5.4	6.1	7.2	8.1	9.1	10.2	11.2	12.2	13.2	14.2	15.1
30	1.2	2.1	3.3	4.2	5.1	6.1	1.2	2.1	3.2	4.2	5.4	6.1	7.2	8.2	9.2	10.2	11.2	12.1	13.2	14.2	15.1

S.No	Demographic variable						Clinical variable														
	AG	SX	ES	MS	R	IC	BMI	HOD	TOD	PHAS	CI	UBP	UOL	DS	TOS	NOS	PBP	TOA	PNG	PM	PMR
1	1.3	2.2	3.3	4.2	5.1	6.1	1.1	2.1	3.1	4.1	5.3	6.1	7.2	8.4	9.4	10.2	11.2	12.1	13.2	14.2	15.1
2	1.2	2.2	3.2	4.2	5.1	6.1	1.2	2.1	3.2	4.1	5.4	6.1	7.2	8.4	9.4	10.2	11.2	12.1	13.2	14.2	15.1
3	1.4	2.2	3.2	4.2	5.1	6.1	1.1	2.1	3.2	4.1	5.4	6.1	7.2	8.4	9.4	10.2	11.2	12.1	13.2	14.2	15.1
4	1.2	2.2	3.2	4.2	5.3	6.1	1.2	2.1	3.2	4.2	5.4	6.1	7.2	8.4	9.4	10.2	11.2	12.1	13.2	14.2	15.1
5	1.2	2.2	3.3	4.2	5.1	6.2	1.2	2.1	3.2	4.1	5.4	6.1	7.2	8.4	9.4	10.2	11.2	12.1	13.2	14.2	15.1
6	1.2	2.2	3.3	4.2	5.3	6.1	1.2	2.1	3.2	4.2	5.1	6.1	7.2	8.4	9.4	10.2	11.2	12.1	13.2	14.2	15.1
7	1.2	2.2	3.3	4.2	5.1	6.2	1.1	2.1	3.1	4.1	5.1	6.1	7.2	8.4	9.4	10.2	11.2	12.1	13.2	14.2	15.1
8	1.2	2.2	3.4	4.2	5.1	6.3	1.2	2.1	3.2	4.1	5.4	6.1	7.2	8.4	9.4	10.2	11.2	12.1	13.2	14.2	15.1
9	1.2	2.2	3.4	4.2	5.1	6.2	1.1	2.1	3.2	4.1	5.4	6.1	7.2	8.4	9.4	10.2	11.2	12.1	13.2	14.2	15.1
10	1.1	2.2	3.3	4.2	5.1	6.1	1.1	2.1	3.2	4.1	5.4	6.1	7.2	8.4	9.4	10.2	11.2	12.1	13.2	14.2	15.1
11	1.1	2.2	3.3	4.2	5.1	6.1	1.2	2.1	3.2	4.1	5.4	6.1	7.2	8.4	9.4	10.2	11.2	12.1	13.2	14.2	15.1
12	1.1	2.1	3.3	4.1	5.1	6.1	1.1	2.1	3.2	4.2	5.4	6.1	7.2	8.1	9.1	10.1	11.2	12.1	13.1	14.2	15.1
13	1.3	2.2	3.3	4.2	5.1	6.2	1.3	2.1	3.1	4.1	5.2	6.1	7.2	8.3	9.3	10.1	11.2	12.1	13.2	14.2	15.1
14	1.4	2.1	3.4	4.2	5.1	6.3	1.1	2.1	3.1	4.2	5.4	6.1	7.2	8.1	9.1	10.1	11.2	12.1	13.2	14.2	15.1
15	1.2	2.1	3.4	4.2	5.1	6.3	1.3	2.3	3.2	4.2	5.4	6.1	7.2	8.1	9.1	10.1	11.2	12.1	13.2	14.2	15.1
16	1.3	2.2	3.3	4.2	5.1	6.2	1.2	2.1	3.2	4.1	5.2	6.1	7.2	8.3	9.3	10.1	11.2	12.1	13.1	14.1	15.3
17	1.4	2.1	3.4	4.2	5.1	6.3	1.3	2.1	3.1	4.2	5.4	6.1	7.2	8.1	9.1	10.1	11.2	12.1	13.1	14.2	15.1
18	1.4	2.1	3.4	4.2	5.1	6.3	1.1	2.1	3.2	4.1	5.2	6.1	7.2	8.3	9.3	10.1	11.2	12.1	13.2	14.2	15.1
19	1.4	2.1	3.3	4.2	5.1	6.2	1.2	2.3	3.2	4.2	5.3	6.1	7.2	8.3	9.3	10.2	11.2	12.1	13.2	14.1	15.3
20	1.4	2.1	3.4	4.2	5.1	6.2	1.2	2.3	3.1	4.2	5.3	6.1	7.2	8.2	9.2	10.2	11.2	12.1	13.1	14.2	15.1
21	1.2	2.1	3.3	4.2	5.1	6.1	1.2	2.3	3.2	4.2	5.4	6.1	7.2	8.2	9.2	10.2	11.2	12.1	13.1	14.1	15.3
22	1.1	2.2	3.4	4.2	5.1	6.2	1.1	2.1	3.2	4.1	5.1	6.1	7.2	8.1	9.1	10.2	11.2	12.1	13.1	14.2	15.1
23	1.4	2.1	3.4	4.2	5.1	6.2	1.1	2.3	3.2	4.2	5.4	6.1	7.2	8.1	9.1	10.2	11.2	12.1	13.1	14.2	15.1
24	1.1	2.1	3.3	4.2	5.1	6.1	1.1	2.3	3.2	4.2	5.2	6.1	7.2	8.1	9.1	10.2	11.2	12.1	13.1	14.1	15.3
25	1.4	2.1	3.3	4.2	5.1	6.1	1.1	2.3	3.2	4.2	5.4	6.1	7.2	8.2	9.2	10.2	11.2	12.1	13.1	14.1	15.3
26	1.2	2.2	3.2	4.2	5.1	6.1	1.2	2.1	3.2	4.1	5.4	6.1	7.2	8.1	9.1	10.2	11.2	12.1	13.2	14.1	15.3
27	1.3	2.1	3.3	4.2	5.1	6.1	1.2	2.3	3.2	4.2	5.1	6.1	7.2	8.2	9.2	10.2	11.2	12.1	13.2	14.1	15.3
28	1.3	2.1	3.3	4.2	5.1	6.1	1.1	2.3	3.2	4.2	5.1	6.1	7.2	8.1	9.1	10.2	11.2	12.1	13.1	14.1	15.3
29	1.3	2.2	3.3	4.2	5.1	6.1	1.1	2.1	3.2	4.2	5.2	6.1	7.2	8.3	9.3	10.2	11.2	12.1	13.2	14.2	15.1
30	1.4	2.1	3.4	4.2	5.1	6.2	1.2	2.3	3.2	4.1	5.2	6.1	7.2	8.3	9.3	10.2	11.2	12.1	13.1	14.1	15.3

APPENDIX XVI

PHOTOGRAPHS DURING ROCKING CHAIR EXCERCISE


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